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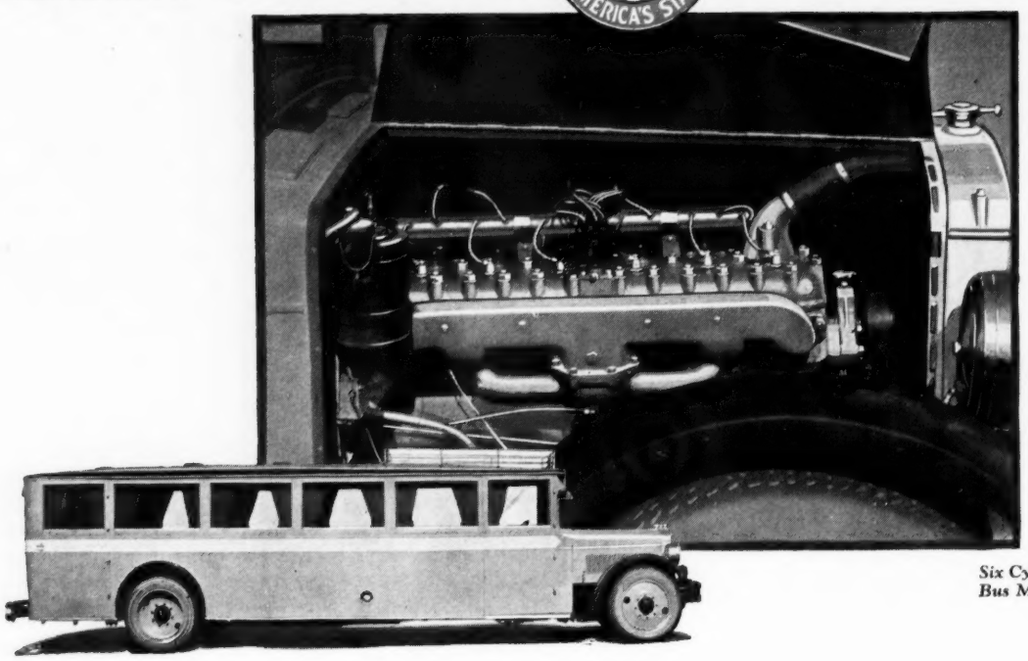
# Dependable Power for Every Purpose

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# Continental Motors

AUTOMOTIVE INDUSTRIES
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# *Fictitious List Prices*—What They May Do to Truck Sales

**Fewer customers are fooled by them every year, but they still have strong unfavorable effect. Honest prices and sound trading methods must come eventually.**

*By Edmund B. Neil*

OWING to a desire to avoid direct price competition with the fictitious list prices set up by some truck producers, a number of the smaller organizations have abolished list prices entirely.

"When we try to sell against a company whose list is higher than is warranted by the real worth of the unit which is being sold," these manufacturers argue, "we find ourselves unable to make any headway, because our competitors, having a fictitious list price, naturally are able to allow far more on trade-ins than is possible with a truck which is legitimately priced."

How sound is this argument? Where will its dictates lead the truck industry as a whole and the smaller producers in particular?

To answer properly these vital questions, and to reduce them to a fundamentally sound basis, three factors must be visualized clearly in their relation to one another:

1. The fictitious list price.
2. Excess trading allowances.
3. An established list price based on production plus sales and advertising cost plus profit.

In the first place let us ask, who is fooled by the fictitious list price? Purchasers of large quantities of trucks, many of whom are quite familiar with manufacturing costs, know that such prices are much higher than are warranted by even the most excessive selling costs, and not only expect but demand substantial reductions from these prices. This knowledge is being rapidly disseminated through the much larger group of purchasers who buy one or a few trucks at a time.

The result is a far from satisfactory attitude on the part of these smaller buyers toward truck manufacturers and their sales methods.

In motor truck circles today one of the often heard questions is, "How much discount did you get 'off of' the ——— Truck Company?" Truck purchasers have a habit of comparing notes. In many localities they are associated or organized closely enough to pool their price data, and even in cases where operators are not so organized, it is not long before one purchaser finds what another paid for the same equipment. A dissatisfied customer is a frequent result.

Aside from the question of good will, the fictitious list price forces the prospective purchaser to resort to methods long since thought obsolete. To secure the best price, he resorts to what is nothing more

PRESENT-DAY truck merchandising methods admittedly are of such a nature as to leave a lot of room for improvement. The fictitious list price is a sales bait which unquestionably hooks business. But the point is, will it be of any ultimate benefit to the industry?

The writer of this article has made a study of the situation and his views are interesting.

He reaches the conclusion that the standard list price, together with sound trading practice, makes an unbeatable combination in the long run.

"The more companies that will stick to this combination," he says, "the sooner will those be shown up who are going ahead on an unsound basis; who are kidding the public (and themselves) with fictitious list prices."

than bartering on each deal. He "shops around" before making a decision. Price becomes the paramount factor and quality is soon lost sight of in concluding the sale.

Proponents of the fictitious list price maintain that it enables the salesman to offer a seemingly better price for the used truck, which nowadays forms an important element in many sales. It must be admitted that there is some ground for this assumption, but who suffers in the end?

Excessive trading allowances have reached the stage where they are almost the subject of the joker or humorist. Manufacturers have been forced by their prospective customers to go to "the height of the ridiculous." What is more foolish than to offer twice or several times what the used vehicle is actually worth, go through the motions of purchase, and then resell at the price the market will bring?

### Buying an Old Truck to Trade

The wise salesman will tell the prospect who has no truck to trade in that he might well buy one for $50 or $100 so that he can turn it in for him and secure the reduced price which may not be granted for a "clean sale" with no old truck to dispose of. Or then, again, why not do what used to be considered proper in some other lines of trade—buy the truck at the excess price and then sell it back to the prospect at its market value. This at least has the merit of saving transportation, resale and the usual repair charges. Some wise dealers now are doing just this. They may be saving their necks for the present, but at what expense to the final stability of the truck industry?

The fictitious list price with its correlative, excessive trading allowance, is neither good business nor in conformity with sound economic practice. While many truck manufacturers have chosen to think that the motor truck can be merchandised as a special case, there is no more reason for this than would be logical in any other competitive business. The commercial vehicle is bought for what it will do as a transportation medium and as such is as much a commodity as is the load which it usually carries. It is, therefore, subject to the same laws of supply and demand which apply in other lines of trade.

### Market Highly Competitive

At the present time it is acknowledged that truck manufacturers can produce motor trucks at a rate in excess of the normal rate of market absorption. They must expect, therefore, that the market, for some time, at least, will continue to be highly competitive, and that if they are to continue to stay in business they must manufacture their products at the lowest possible cost and sell them at the least expense.

Yet they must not overlook the fact that, regardless of everything else, they must sell at a profit, at least with a total net profit from all sales at the end of each fiscal period.

It is this which has led to the fictitious list price. Since the total profit is what is most essential, this method of selling trucks offers the possibility of regaining what is lost on some individual sales by sales made with a larger profit margin. That this practice has its merits cannot be denied, yet it certainly offers no element of stability of interest to either purchaser or manufacturer.

What is price? What determines it?

From a sound economic standpoint, selling price is made up of manufacturing cost, plus sales and merchandising cost, plus reasonable profit as required to support a present day business structure. Under a competitive market—that is, when supply is equal to or greater than demand—selling price must be low, yet one cannot neglect any of these factors. What is more useless than to attempt, as a regular practice, to sell any commodity at less than normal, or no profit, even though turnover be maintained? It merely puts forward the fatal day a little longer. The result is always the same.

If business cannot be secured at a profit, it usually isn't worth having. If your competitor can sell for less than you, let him do so. Look to your own manufacturing and sales costs. If you know he is selling at a loss merely to get the business, why put your neck in the noose? Let him put his in it.

Selling price must be based only on the sound economic factors mentioned above if the truck market is to become stabilized. This price necessarily must vary to a minor degree as material and labor costs change, but the fluctuation will seldom if ever be as great as the differences in price common under the present fictitious list plan. Prices can be quoted to hold for specified periods just as they are in any other business.

### One-Price Policy Is Best

John Wanamaker started the "one-price idea" many years ago in the dry goods business. He stuck to it. Gradually he established the fact that his prices were the same to all. He gained the respect and confidence of the public. People finally came to understand that his price was based upon sound figuring and that it meant the value it indicated. No one now questions the wisdom of his policy.

The standard list price combined with sound trading practice makes an unbeatable combination in the long run. The more companies that will stick to this combination, the sooner will those be shown up who are going ahead on an unsound basis; who are kidding the public (and themselves) with fictitious list prices.

With this combination of sound economic practice as a background, the small maker stands a good chance of staying on his feet with the big one, provided that he embodies in his selling policy certain other necessary practical and intelligent methods.

There is a market for the products of the small manufacturer of motor trucks in which he can be successful. He should confine himself to the territory which he can personally control. If smaller manufacturers will do this they can exert the same intensive selling effort that the larger manufacturers do with no higher selling costs. This plan has been more successful than the attempt to cover with half hearted sales effort a larger territory that is beyond the financial scope or resources of the small distributing organization.

# 1925 Policy Bearing Fruit

*By Norman G. Shidle*

THE policy of allowing sales to govern production schedules which was adopted as a guiding principle in 1925 automotive operations has borne fruit. Definite figures are available now to prove what everybody had believed to be true for some time past—namely, that manufacturers, distributors and dealers all have benefited from the new policy.

Here are some of the outstanding facts developed from first quarter figures:

1. Production in the first quarter ran behind that of 1924 by about 18 per cent. Retail sales were behind those made in the first quarter of 1923 by only about 13 per cent.
   (This means, figuring roughly, that the dealers of the United States have invested in car stocks approximately $50,000,000 less than they had at the end of March last year.)
2. Balance sheets of car and truck manufacturers covering the first quarter of 1925, and, in some cases, the last quarter of 1924, generally indicate an increased profit per car.
3. Specific reports from individual companies show that the decrease in car stocks between March 31, 1924, and March 31, 1925, is much greater in many cases than the 5 per cent difference for the industry as a whole. The inability of a few companies to make any marked progress in reducing stocks has influenced the general average considerably.

Specific figures for the first quarter are specially interesting in showing the results of the production-governed-by-sales policy because they give a conservative rather than an optimistic gage of its success. Sales were not up to expectations during January and February of this year. A good many makers who had promised their dealers that they wouldn't overload them under any circumstances found that they had promised something which took real fortitude to carry out.

Somehow or other the idea had gotten around that once Calvin Coolidge was elected, business would rush along at an astounding pace just in sheer joy at the event. Weird and remarkable stock market activity immediately following the election further strengthened this political conception of economic trends. But men on the firing line kept looking for the boom in vain. Despite soaring stock prices, the salesmen didn't find many people dashing to their hotels to give them orders. They still had to go out and sell. Sales came along reasonably well, but the expected boom never materialized so far as industry itself was concerned.

The same steady upward trend continued after the first of the year, but automobiles weren't sold in as great numbers up to March 1 as had been generally expected.

Then came March and generally fair weather. Automobile sales really got under way. By this time expectations had been modified to such an extent that the sales which actually developed were considered very good. A boom hadn't arrived, but good times undoubtedly had. Excellent March sales in most lines were responsible largely for whatever reduction in dealer stocks has taken place. Consequently the first quarter figures, encouraging as they are, can be accepted as conservative estimates of what the situation actually is today, because April has been much better, both in sales and production, than any month in a long while.

Some idea of the changed relationship between production and sales is given by study of the General Motors figures for the corresponding quarters of 1924 and 1925. It is to be expected, of course, that production will exceed sales in the first few months of every year, because the dealer must accumulate some stocks to take care of spring business.

In January to March inclusive, of 1924, General Motors' sales to dealers exceeded the dealers' sales to users by nearly 53 per cent.

In the same period of this year sales to dealers exceeded the dealers' sales to users by a little less than 14 per cent.

One prominent maker in the middle priced field reports dealer stocks of 3500 cars at the end of March as against 7000 at the end of March last year.

These specific figures show clearly that the car manufacturers have been carrying out their announced policy of making production follow the sales curve, despite the relatively low sales which materialized in January and February. And the profit and loss statements which are coming through indicate that, from the manufacturers' standpoint, the policy has been a profitable one.

That the dealer has benefited there can be little doubt. There is some indication that a few prominent makers are beginning to push their dealers further than the latter would like at the present time and that at least a danger of overproduction exists in these two or three cases. Generally speaking, however, the car makers have played the game according to the rules which they announced and their retailers have benefited accordingly.

# Continued Growth of Motor Accidents a Threat to Industry

*Safety problem one which still awaits solution. Of vital importance to the manufacturer. Last year's casualty list heaviest in history. The situation today.*

By Robert L. Cusick

OF all the problems which confront the automobile industry at the present time, none is more important or perplexing than that of safety. How can the streets and highways be made safer for motorists and pedestrians?

The demand for motor vehicles has become fairly well stabilized. Ample production facilities have been set up to meet manufacturing needs for some time to come. Merchandising methods have reached a pretty satisfactory state of development. Other problems of a similar nature have been met and licked.

But the heavy Monday morning casualty list we still have with us.

The manufacturer is vitally interested in the problem because it is one which is going to have an unwholesome influence on future business unless effective remedial measures are speedily found and applied.

If the accident toll continues to increase at the present rate many persons who could afford to own a motor car, and could be induced to buy under other circumstances, will decide that it is better to spend Sunday afternoon on the front porch rather than risk life and limb on the road—or run over a pedestrian. It is a known fact that many think that way even now.

To face the figures is an unpleasant task. Yet, bad as the situation seems, there are signs of encouragement here and there to brighten the vista.

During the past eight years there has been a steady decline in the motor fatality rate as based on the number of vehicles in use. Thus, whereas the number of deaths per 100,000 vehicles in 1917 was 178, it was only 98 in 1924. And while motor vehicles increased 17½ per cent last year, the increase in fatalities over 1923 was only 5½ per cent. This is even a greater improvement than appears on the surface because in addition to the increase in the number of motor vehicles in use, we must consider the ever-present increase in population, which further complicates the situation and is an important study in itself in connection with the traffic problem.

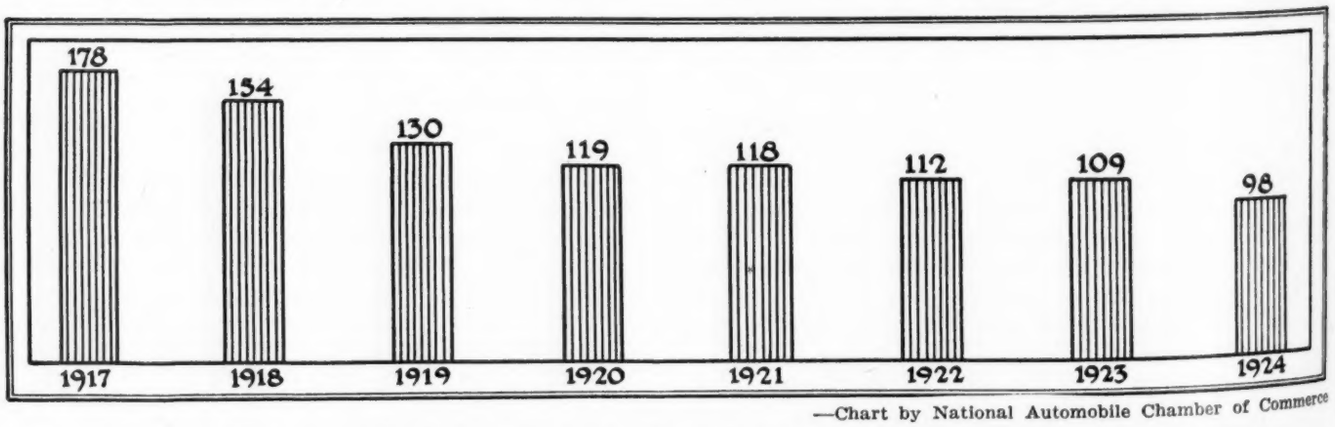
Had it not been that the motor accident rate throughout the country has decreased steadily from year to year as the number of vehicles increased, fatalities in 1924, based on the 1917 rate, would have reached the appalling figure of approximately 30,000. As it was, the total deaths reached 17,345, almost 1000 more than in 1923, according to the figures of the National Automobile Chamber of Commerce.

### Two Facts Which Stand Out

Two facts therefore stand out. One is that some force, which cannot easily be isolated and put under the microscope, has operated to scale down the accident rate as motor traffic increased. The other is that, despite this reduced *accident rate*, the *total number* of accidents and fatalities each year keeps getting larger.

Vehicle registration and population are simply outstriding what, for want of a clearer definition, may be termed the law of diminishing hazards.

We're always going to have motor accidents. Let's recognize that fact at once. And in the not far future we are likely to have occasional accidents of a much more serious and mind-jolting character than any we have had yet. This will come about when bus transportation reaches the state of development toward which it is headed—when high-speed vehicles of very large carrying capacity are used commonly for fast, long-distance travel. Better safeguards than any now in existence will be employed and accidents will be less frequent, but when they do occur the consequences will be more serious owing to the large number of persons involved. As




—Chart by National Automobile Chamber of Commerce

Motor fatalities per 100,000 vehicles registered. The accident rate has declined as the number of vehicles in use increased

evidence of this we quote a headline which came to our attention in a newspaper last week: "Twelve Hurt as Bus Crashes Into Roadster."

To realize that accidents can never be entirely eliminated we have only to study the history of the railroads. Railroads have been operating for a hundred years. During this entire time every energy has been bent toward elimination of accident hazards by the development and adoption of innumerable mechanical safeguards, many of them of the most ingenious character. Roadbeds and rails have undergone constant improvement; instantaneous and powerful air brakes are used; train movement is rigidly regulated by automatic block signal systems. But still the railroads have accidents. They are still at grips with the safety problem. At the present time they are spending millions of dollars for the installation of automatic train control systems, in compliance with the demands of the Interstate Commerce Commission.

It is interesting to note that the railroads, by effecting automatic train control, hope to accomplish a result that will never be possible except in a very restricted way in highway transportation—to prevent or minimize accidents by bringing into play automatic stopping devices the instant the driver (in this case the engineer) becomes lax in his attention to duty in a territory where caution is required.

Mechanical safety devices can never to a very large extent take the place of the human equation in automotive operation although there are some limited examples already to show that certain possibilities along this line exist. Motor vehicle speed can be kept within safe bounds at all times by the use of automatic speed governors. And on a number of buses now in service with air brakes a special foot control pedal hooked up with the accelerator pedal is used. When the operator depresses the accelerator the brakes are released, and remain in the release position as long as the accelerator is used. If he lifts his foot from the pedal, however, the brakes are immediately applied. There is of course a neutral pedal position but it can not be maintained unless the foot remains on the pedal, which means that the driver must have his wits about him to keep going.

## Careless Driving Chief Peril

Nearly every investigation into motor accidents discloses that the majority of them are due to careless or incompetent driving. A record was kept of accidents over an eight-month period in the States of Montana, Oregon and Washington. The accidents in that time totalled 1606 and 40 per cent were traced to careless drivers in a report issued by the U. S. Bureau of Public Roads. A classification of the accidents was given as follows: Faulty operation by driver, 1020; faults of others than drivers, 191; faulty equipment, 181; faulty highway conditions, 214. Of the latter, 19 were due to too narrow roadways and 150 to skiddy surfaces.

It is interesting to note in this particular study that, in the three States considered, the trend toward a lower accident rate as the number of vehicles increased was not in evidence. Montana, with the lowest registration, had the fewest number of accidents per 1000 cars, while Washington, with the largest registration, had the most accidents per 1000 cars.

In a recent bulletin by Robbins B. Stoeckel, Commissioner of the Department of Motor Vehicles of Connecticut, it was shown that out of a total of 20,781 automobile accidents in that State in 1924, no less than 14,559 were due to recklessness of motorists. This seems like a very high percentage but the figures are there; and probably no State has gone more thoroughly into the compilation of accurate accident statistics than Connecticut. Mr. Stoeckel lists the motor accidents that occurred in every town in the State. He then gives the population of each community in the State, the number of motor vehicles registered there, the number of accidents, the number of court convictions, the number of suspensions and the number of complaints.

## The Totals for Connecticut

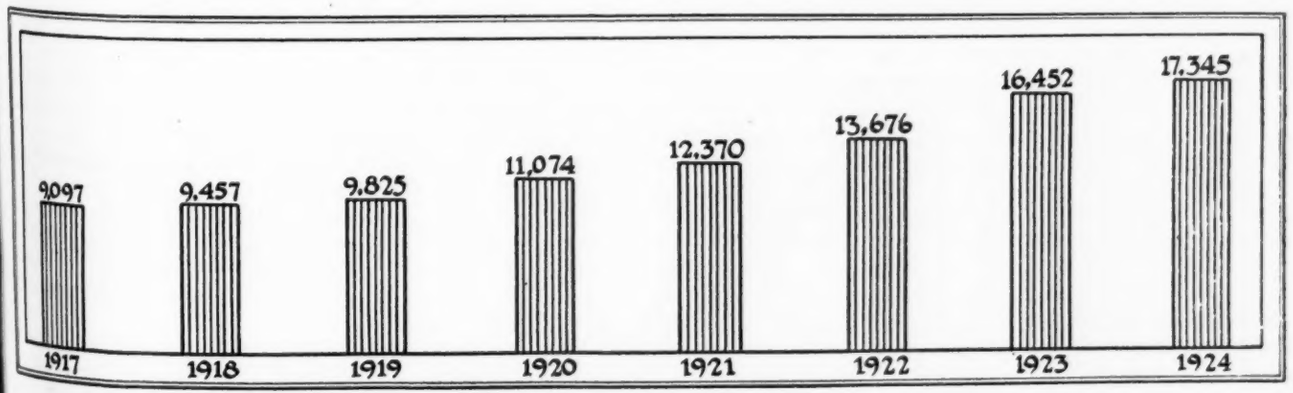
Here are the totals: Population of towns, 1,380,631; registrations, 209,286; accidents, 20,781; convictions, 11,919; suspensions, 6,548; complaints, 832.

As a result of the 20,781 accidents, 302 persons were killed, 7,158 injured, and property damage done amounted to $1,878,000.

In the previous year, 1923, Connecticut had 189,566 registrations, 16,500 accidents, 280 persons killed, 4879 injured, and property damage amounting to $1,650,000. It will be noticed that the increase of vehicles in 1924, as compared with 1923, was approximately 20 per cent, and that about the same proportionate increase held true of accidents.

Next to reckless driving, Mr. Stoeckel found that most of the accidents were due to carelessness of children walking or playing on the streets and roads. Then came carelessness of adult pedestrians, carelessness on the part of operators of other classes of vehicle (street cars, bicycles, push-carts, etc.), defective automotive equipment and carelessness of occupants other than the driver, in the order named.

In concluding his report, he says: "In general it can be concluded that the present situation regarding motor traffic in Connecticut does not greatly differ from that in 1923, except that traffic has more nearly approached the point of saturation and it is becoming more and




This chart shows the increase in the total number of motor vehicle accidents from year to year

*The results of two typical motor accidents, one on a rural highway, the other in a city street. Both took their toll of human life. Both might have been avoided*

Photos by Underwood & Underwood

more apparent that individual laws to meet conditions and individual applications of discipline will not much longer be effective. What is needed is a complete, uniform, active enforcement by police, and uniform discipline by courts, the whole directed in such a manner as to impress upon each operator the necessity for care and caution."

In that brief paragraph the author has touched on three of the five elements around which the safety problem revolves. These elements are:

(1) Motor vehicles' drivers. (2) Pedestrians. (3) Traffic officers and laws. (4) Courts. (5) City and highway planning and construction.

To eliminate, educate or reform the reckless and careless driver is probably the most pressing need, since the figures show that he is responsible for from 60 to 75 per cent of the motor accidents occurring at the present time. This is clearly a most difficult problem to approach. How is the reckless driver always to be recognized? What standards of measurement can be set up and applied to distinguish the careless from the careful under ordinary conditions?

### Driver Tests of Little Value

Such methods as have been thus far evolved to deal with this phase of the situation have proved inadequate, although they are undoubtedly a step in the right direction. The idea back of tests for drivers is sound, but unless the tests can be conducted much more carefully, conscientiously and exhaustively than is now generally the case they mean little. Laws making it compulsory to pass a test before being licensed to drive usually fail to accomplish the desired results by reason of the fact that the machinery set up to apply the tests is of insufficient capacity to properly handle the job. The examiners, faced by a long line of applicants, grow careless themselves. They hurry through the task. In some instances no test is given at all. "Can you drive?" they ask an applicant. "Yes," he replies. They give him an O. K. and send him on his way.

Thus, regardless of all the laws on the subject so far enacted, thousands of reckless, careless drivers still are turned loose on the roads and streets, with what dire consequences the casualty lists show. Given the stiffest kind of an examination, however, the most reckless driver might be the first to pass as skill generally is the determining factor.

But since it is admitted that this is a difficult matter to control, the next step should be to see that a more vigilant watch is kept for the unfit drivers on the road. This is where traffic supervision comes in—traffic policemen, regulations and laws. More traffic police are urgently needed. Taking the cities of the United States as a whole, there are at present 7150 persons and 1470 motor vehicles to every policeman assigned to traffic duty. This is revealed in a survey recently made by the National Automobile Chamber of Commerce.

Twice as many traffic officers as we now have would not be too many. The increase is needed chiefly to augment the force of "traffic patrolmen" rather than cornermen. Rural highway patrols should be materially strengthened. The closer check that would be gained on motor vehicle movement by more traffic officers would greatly accelerate the detection and weeding out of the reckless and incompetent. Stricter enforcement of the laws and more frequent revocation of drivers' licenses where the law is intentionally violated would do much toward closing up the loopholes which are left open by loose driver examinations.

Thousands of traffic violations go undetected and unpunished. Each of these violations has its accident hazards. Every year, as the cars multiply, the hazards are increased.

One of the greatest menaces to traffic is the drunken driver. How many infractions of the law from this cause occur throughout the country it is impossible to estimate, but approximately 50,000 cases are brought to light by arrests every year. Fines and imprisonment, or both, and revocation of licenses are the penalties usually meted out. And apparently the punishment will have to be made more severe before the necessary relief is found.

In the State of Massachusetts, in 1923, a total of 46 fatal accidents were traceable to intoxicated operators and in these 46 accidents 62 persons were killed and 53 injured. This gives some idea of the seriousness of the average accident of this kind.

The courts of justice have a very important part to play in the campaign against reckless driving and all other violations of the traffic laws. Traffic courts should be provided with the necessary facilities to give each case a careful hearing and pass intelligent judgment on it. Traffic officers in the honest performance of their duties should have the backing of the courts, and, on the other hand, the legal rights of the motorist should be rigidly upheld.

Laws are of no value if they are not administered. Not long ago a youth was arrested in a certain large city on a charge of reckless driving. The specific charge of the arresting officer was that the prisoner had been driving with one hand, his other being around a girl. The magistrate before whom the case was called asked if that was the only ground for arrest. The officer replied it was.

"Well, sir," said the magistrate, "I just want to say that I once rode to a baseball game in a car driven by a one-armed man and he was one of the most careful and safest drivers I ever saw. Case dismissed."

This disposition of the case tended to discredit an officer who had no doubt attempted to perform his duty as he saw it. Certainly his ardor for further law enforcement efforts was not increased. And the prisoner who escaped punishment could hardly have had his respect for the law heightened.

Pedestrians are the principal victims of motor accidents. In February, the National Safety Council, tabulating fatalities occurring from automobile accidents in 74 cities, having a total population of more than 30,000,000, found that 340 persons were killed during the month and that 77 per cent of them were pedestrians.

The National Bureau of Casualty and Surety Underwriters last year presented the results of a study of 2020 motor accidents which came to its attention. Of this number, 1151 involved pedestrians. The pedestrian was held at fault in 572 cases; the blame for the balance was laid on the motorist. In 1923 Massachusetts had 155 fatal accidents involving pedestrians, and 116 of these were held due to carelessness on the part of the pedestrian. The National Automobile Chamber of Commerce, analyzing 1390 deaths from motor accidents during the first seven months of 1924, attributed 536 of them to the motorist, 291 to poor roads, defective vehicles, etc., and 727 to careless pedestrian habits.

The Chamber of Commerce, commenting on this phase of the situation, said that, while so many accidents are "technically the fault of the pedestrians, yet the motorist must be ever alert to unexpected traffic violations of those on foot. Safety, alertness and courtesy, rather than insistence on right of way, should be the motorist's rule." The righteousness of this cannot be questioned.

Better regulation of pedestrian traffic must be obtained at points of congestion. Some cities now attempt to control the movement of pedestrians as they control the movement of motor vehicles and this seems to be the most practical solution. Los Angeles has recently installed special semaphores for pedestrians on its traffic signals. The public is said to look not unkindly on the innovation, being satisfied to obey the signals, especially in view of the fact that the delay in crossing streets is reduced to a minimum by halting the motor traffic at shorter intervals.

Many pedestrians are run down and killed on rural and State highways. Roads of this type eventually should provide side paths for pedestrians. The roadway itself in many cases should be made wider. The highway officials of New York State are now advocating that all trunk roads be not less than 20 ft. wide. This is essential, they say, to take care of a traffic density which is doubling every three years. All recommendations of this kind mean the expenditure of money, but it is obvious to anyone who studies the problem that the final solution lies in improvements which can be made only at heavy financial cost.

Here again we can draw conclusions from the railroads. The safety progress they have made has been gained very largely by a constant building or reconstruction program. Hazards have been removed by spending money for the elimination of dangerous grades and curves, tunnels and deep, overhanging cuts; installing expensive mechanical safeguards, etc.

The economic loss to the nation every year through motor accidents has reached a staggering sum. It has been estimated, all factors considered, as exceeding $1,000,000,000. Large expenditures, looking to a reduction of this stupendous loss, certainly are warranted.

It is only through financial outlay that nation-wide educational campaigns can be carried on; that improved traffic signal systems can be developed and installed; that sharp road curves and narrow bridges can be eliminated; that more scientific methods of routing traffic through congested zones can be worked out; that new streetways can be created in large cities; that congested "bottle necks" can be relieved; that business zones can be decentralized and spread out over larger areas; that whole sections of cities can be replanned and rebuilt.

All of these things, and more, must be done if the situation is to be kept in hand. On this the students are unanimous. Millions of new motor vehicles are taking the road every year—in 1924 the number exceeded 3,000,000; this year it will be about the same—and our population in the last five years has increased 8,000,000. That's the problem.

# Changes Made in Engine and Chassis of Oldsmobile Six

*Ratio of connecting rod to stroke is altered, making cylinder block slightly higher. Cooling facilities are amplified. Clutch throw-out bearing self-lubricating. Brakes larger.*

By W. L. Carver

IN line with a policy adverse to the frequent announcement of new models, but committed to a constant improvement in step with engineering development, several revisions have lately been made in the powerplant and chassis of the Oldsmobile Six.

Outstanding among them is the change in the ratio of connecting rod to stroke, which makes the cylinder block slightly higher and smooths out engine performance. Cooling facilities have been amplified by a cast-in manifold at the water intake side of the block in conjunction with drilled distributing passages.

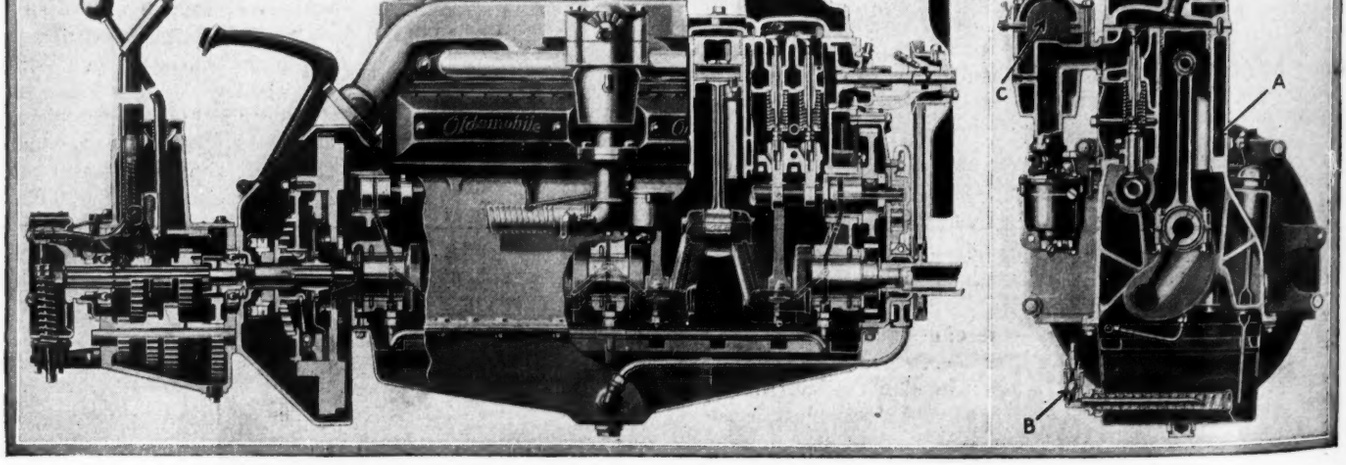
In addition to these, the oiling system has been modified, the tappet cluster brackets are supported more rigidly and a trunnion support has been placed at the front of the engine. On the frame, a wider rear cross member stiffens the rear end and affords complete protection for the gas tank. The adoption of 31 x 4.95 low pressure tires has brought about the change to a worm and split nut steering gear of a somewhat higher ratio. A new type of self-lubricating bearing has been placed in the clutch throw-out position.

Body types are continued with no change and Duco has been the standard finish on the entire line for some time. Production plans have been established for an output consisting of 60 per cent coaches, 15 per cent other closed bodies and 25 per cent open cars. As the revisions have been made gradually and are now incorporated in all cars, no change in prices is to be made.

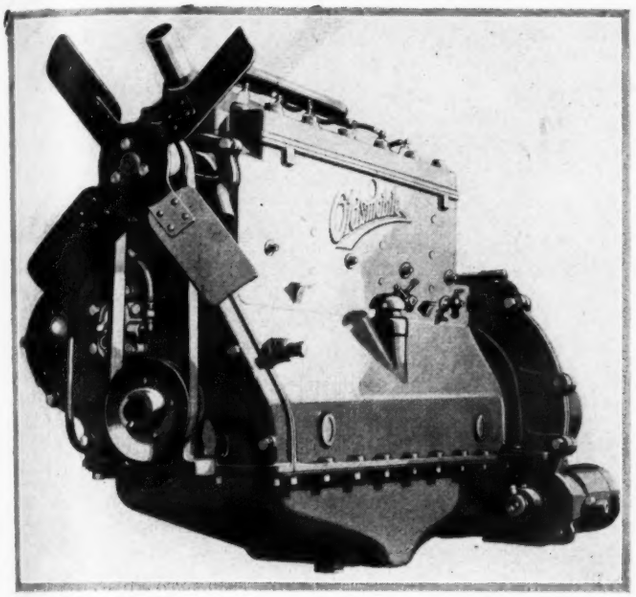
As illustrated, the appearance of the revised engine is somewhat smoother, as the water jacket wall has been carried down to join with the contour of the crankcase wall. In spite of this change the bottom of the waterjacket proper is approximately level with the lowest position of the piston head. The section below this and the top of the crankcase is now utilized as a water header or manifold, and forms the outlet passage of the pump which is located at the front end of the block and driven from the fan belt. Four holes coinciding with the location of the pipe plugs are drilled from the manifold into the water jacket. By this means water enters the block at the front and rear and between cylinders 2 and 3, and 4 and 5 respectively. Tests have shown a variation in jacket temperature of less than 4 deg. F. from end to end of the block.

### Roomier Water Passages

In conjunction with this change, the width of the block and the cylinder head casting has been increased to allow roomier water passages through the joint between these two members. Cylinder and valve relationship has been varied somewhat so that there are no common walls and ample space is provided for water circulation clear around the valve seats and barrels. The lower or crankcase portion of the block has been stiffened by the addition of longitudinal ribs at each of the webs. Studs of ½ in. diameter are now used at the front and middle crankshaft bearings, although bolts of the enlarged diameter are retained at the




*Left—Longitudinal section of revised engine from right side, showing details of oiling system, manifolds and clutch throw-out bearings. Right—Cross section showing water distributing header to right of cylinder barrels, also details of oil screen and heat control at intake manifold*



*Left side of engine. Position of water distributing ducts coincides with location of pipe plugs*

flywheel bearing to facilitate service work. The center bearing has been lengthened ⅛ in. in conjunction with these changes.

Connecting rods now are 9 in. long between centers as compared with 8½ in. formerly. The taper shank design has been supplanted by a straight channel section and the piston pin bushing is pressed into the head of the rod. The pin, which is 55/64 in. diameter, is secured in the piston by a dog-pointed stud that engages with a drilled hole. A lock nut and washer retain the stud, which is threaded into the piston. Cast iron pistons are continued, although the length of the skirt has been increased by ¼ in., making the overall length of the piston 3 9/16 in. Three rings are located above the pin and a chamfered oil relief groove with diagonal drain holes is located below the lower ring. In order to permit closer fitting, saw slots are cut in the working faces of the pistons just below the lower ring, thus insulating these surfaces from direct conduction from the head.

### Bronze Bushings in Camshaft

Where the center and rear camshaft bearings formerly were reamed directly in the crankcase, pressed-in bronze bushings have been interposed and the length of the center bearing has been increased ⅞ in. to a total of 2⅝ in. Cluster brackets for the tappets are continued, although the castings are much heavier and ribbed for strength and to provide oil pockets which are drilled to provide direct lubrication to each tappet bearing. In addition to the three bolts which secured each of the clusters to the adjacent cylinder barrels, two bolts have been placed vertically to insure greater rigidity.

Location of the oil pump on the timing gear cover with drive from the front end of the camshaft continues, but where the former hollow camshaft served as the oil distributor for the full length of the engine, a copper tube line in the bottom of the crankcase carries the oil to the middle and rear bearings. The oil under pressure leaves the pump by means of a short drilled hole in the camshaft which connects with a cross hole at the front bearing. This cross hole matches with a turned annulus in the surface of the camshaft bearing which in turn matches with a duct leading to the front main bearing. A ring turned in the bronze shell of this bearing conducts the oil around the front crankshaft journal and down through the cap to a copper tube connection which extends to the center and rear bearing caps.

Drilled holes in the cheeks of the crankshaft connect the main bearings with the drilled crankpins and holes are drilled between the interior and exterior here to supply the rods. Where the ducts at the center and rear bearings formerly carried oil down from the camshaft to the crankshaft, this process is now reversed. Due to the arrangement of crankshaft drilling, each crankpin is supplied with oil from two main bearings. The construction of the oil screen is shown in the illustration. A check valve has been located at the outer end of the screen assembly to prevent the loss of prime at the pump. A small auxiliary filler is located above the pump in the bend of the copper tubing which connects with the screen.

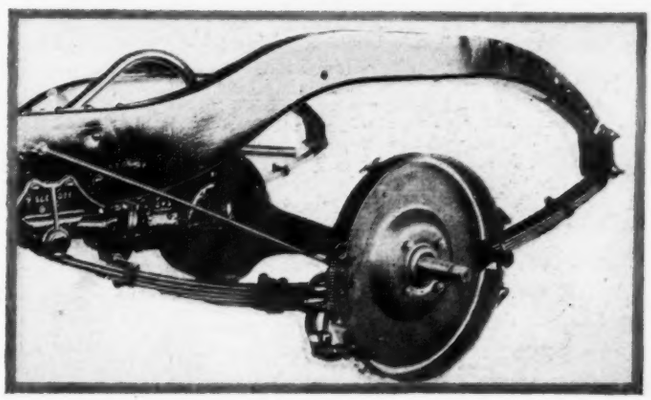
Tappets have chilled iron heads which are attached to steel shanks. A slight change has been made in the sizes of the valves, the diameter of the exhaust being 1½ in. and that of the intake 1 5/16 in. In conjunction with this, the diameter of the intake manifold has been reduced to speed up gas velocity. A hot spot is placed at the head of the riser from the carburetor and heat may be applied around the riser as desired by the manipulation of a wing valve. In one position, the exhaust gas passes directly over the hot spot while in the other the stream is also diverted downward, and therefore heats a considerable portion of the riser.

### Trunnion Engine Support

A conventional trunnion support has replaced the two bolt flange at the front end of the engine. This construction relieves the crankcase of the twisting strains which are bound to occur in the frame and results in quieter operation and greater bearing life. Helical gear drive is continued at the timing train, although the metallic gears on the crankshaft and generator shaft are replaced by Celeron gears which are lapped in during the course of assembly. Full automatic ignition is used in place of the manual operation. The Remy units are standard equipment and a ring type centrifugal governor adjusts the spark position to the speed of the engine.

Lubrication of the clutch throwout bearing as one of the car owner's troublesome problems has been eliminated by the substitution of a compressed graphite bearing for the usual annular bearing. The graphite throwout shoe is clamped in a trunnion ring which is held in the fork of the throwout lever by steel spring clips. Tests for wear of this shoe have demonstrated that the action is very slow even under constant load.

The changes at the engine and the clutch have resulted in an increase of ½ in. in the wheelbase which is now 110½ in. This with the new rear cross member constitute



*Rear end of Oldsmobile Six chassis, showing larger two-piece brake band and muffler tail pipe*

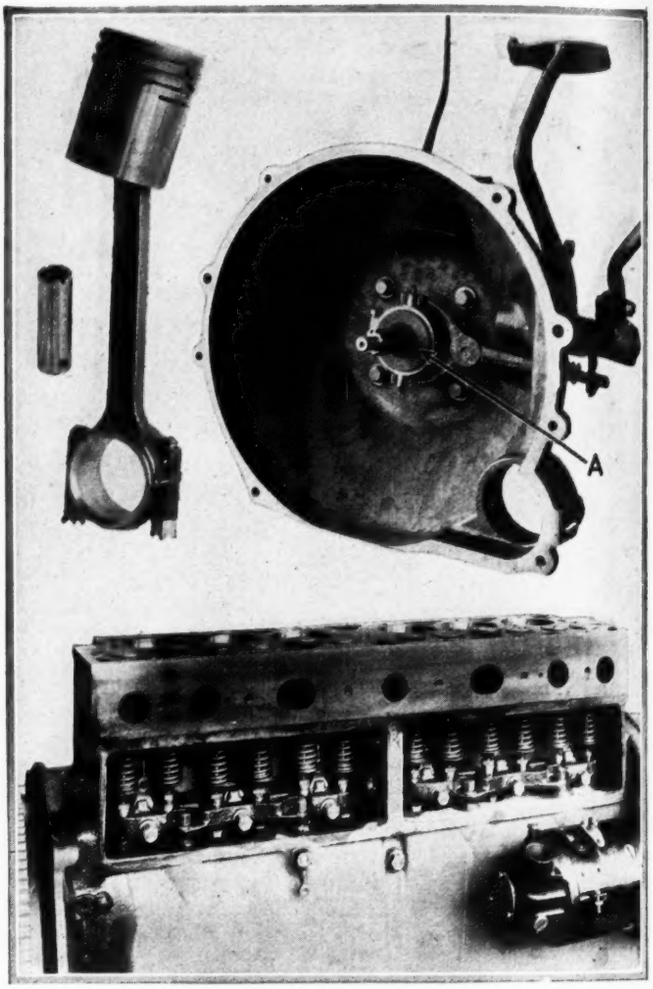
the outstanding chassis changes. The width of the rear member has been increased to cover the gas tank fully and greater stiffness is obtained as several rivets attach this member to both the upper and lower flanges of the side members. There is a new pressed steel torpedo-shaped muffler and a tail pipe conveys the exhaust to the rear of the car.

Low pressure tires of 31 x 4.95 dimensions are standard on all body models. With this change, the steering gear has been given a reduction of 9 to 1 as compared with the former 7 to 1, and a worm and split nut type supplants the older worm and gear. The manual controls have been removed from under the wheel and the manual spark control has been eliminated altogether. The hand throttle control is placed at the head of the steering column in an arrangement in which the short lever with its cap hub completes the appearance of the center of the wheel web.

### Adjustable Steering Column

An unusual feature is the adjustability of the steering column. Holes are placed in the mounting bracket under the instrument board so that the wheel can be adjusted readily to the height of the individual owner.

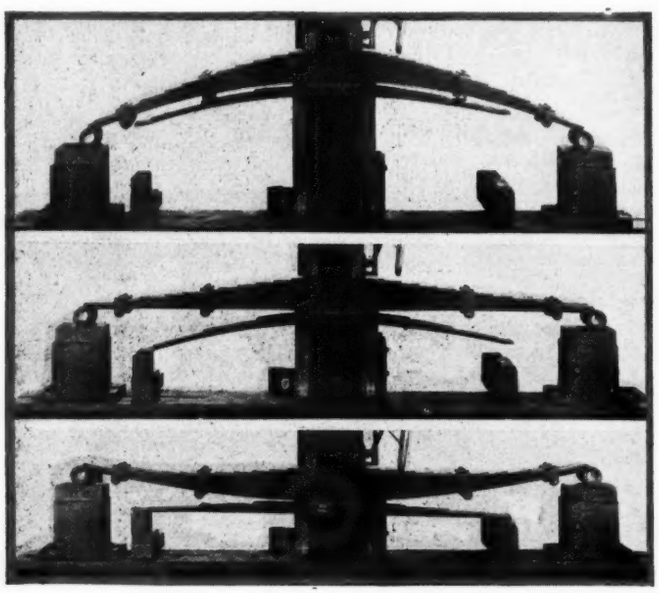
Service brakes, which are contracting bands at the rear axle, have been enlarged, although the two-piece band construction is retained. Where the diameter formerly was 12⅜ in. and the width, 1½ in., the new dimensions are 13 27/32 in. and 1¾ in., respectively. These brakes are operated through an equalizer which is located at the center cross member and the emergency brake continues at the rear end of the gear box. A slight change has been made at the pinion shaft, as a felt oil retainer ring has been installed ahead of the outer bearing in place of a steel thrower ring which was formerly located back of this bearing.




*Above, at left—Details of Oldsmobile piston with insulated skirt and straight shank connecting rod. Above, at right—Compressed graphite clutch throw-out bearing which is clamped into trunnion ring. At bottom—Tappet cluster brackets with three horizontal and two vertical mounting bolts*

## Special Type Bus Spring Developed

TO meet the special requirements of city type buses, which must provide comfortable riding whether the bus is occupied by a single passenger or carries a capacity load, the Detroit Steel Products Co. has developed a new auxiliary type rear bus spring. The spring, of which illustrations are shown herewith, was designed for a 11,000-lb. street car type bus with a carrying capacity of thirty-seven seated passengers.



*Showing bus spring under light, intermediate and heavy loads*

While the general principle of the design is not new, the spring embodies several new and ingenious features. In the first place, the ends of the auxiliary spring are of unequal stiffness, and so arranged that the more flexible end comes into contact first. This gradually increases the resistance of the whole spring and serves to carry the load until it becomes so great that the second and stiffer end of the auxiliary comes into contact. This adds still further resistance and enables the spring to function under a capacity load, with maximum comfort to passengers and minimum risk of breakage.

The unequal stiffness of the two ends of the auxiliary spring may be obtained in different ways. The simplest and most economical manner is to make the legs of unequal length. When the chassis design does not permit such construction the legs can be made of equal length and the number or thickness of the plates in the two ends made different, to insure the proper flexibility. Engagement of the ends of the auxiliary may be made directly on the bus frame or on brackets secured to it, or the entire spring assembly may be made self-contained, so that the ends of the main spring, when deflected, come into contact with the ends of the auxiliary. In this latter case the auxiliary spring is placed under the main spring.

It is claimed that with this combination spring there is no unpleasant or abrupt change in stiffness.

# Just Among Ourselves

### Large Sums in Stolen Automobiles

THE economic as well as the moral phases of crime are emphasized to the public by the daily crime records published in newspapers of some cities. We were struck by the fact that nearly $24,000 worth of automobiles were stolen in one day in Detroit recently, the actual number pilfered being 62. Don't know whether this is higher or lower than the usual average, but it did bring home to us the large sums involved in stolen automobiles. On the same day 44 cars valued at about $17,000 were recovered.

### See a Play or Buy a Car

"WELL, Sally, I don't know. Had we better go to the theater tonight or would you rather buy an automobile?" That's no mythical query for a man to put to his wife these days. For less than the price of two good seats to a musical comedy and a very modest supper a man in Detroit can buy a Ford runabout or touring car and he can complete payment for it by paying less each week than many people spend for candy and cigars—$12.60 down and $5 a week! That's an epoch-making event in automobile financing and no mistake. It makes one sit back and think about what the average citizen can have today in the way of comforts and utilities as compared to his forebears of 1825.

### What You Can Get for $100

WE hear much about the increased cost of living and how higher prices make the $5000 salary of today just about comparable to the $1000 salary of a century ago. Did you ever think what you can get for $100 cash today? With $100 cash and the knowledge of where to go you could bring home with you an automobile, a motorcycle, a phonograph, a radio, a piano, a suit of cloth s, a set of bedroom furniture, a set of dining room furniture, a vacuum cleaner and probably have left over enough to load a baby carriage full of household goods from the 5 and 10c. store. Then all you'd have to do would be to find ways of meeting the ensuing payments each week. Sir Walter Scott couldn't have brought home any such assortment of material for $100, not even of such articles as were existent in his time.

### What About Factory Sales Schools?

WHAT about the factory school for dealers and dealer salesmen? We've heard a lot of answers to that question in the last week or so. Everybody seems to agree that a factory operated training school benefits the men who attend it, but when it comes to estimating the practical value to the company conducting the school there is considerable disagreement. One man who has been associated with such enterprises in several factories says that the school isn't worth the money it costs because the men trained in it, just like others in the dealer organization, move on to some other company or even to some other industry. Consequently the money invested in them is wasted.

### Shop Training May Point the Way

THIS is the rock on which many industrial training plans have foundered, although the experience in training skilled shop workers has been more extensive than in training salesmen. Many of the shop courses conducted by individual manufacturers were discontinued because the factory involved objected to training men who later went to work for their competitors. But today there is a shortage of skilled workers. And there will be such a shortage until some systematic system of training becomes general. The old apprentice system has broken down. If the individual factory isn't going to do the job, who is? The city? The state? The private school operated for profit? The same questions are arising as regards training dealer salesmen. The shop training problem hasn't been solved yet, but the experiences developed there may help in analyzing this new problem. We'd be glad to get further opinions on the subject.

### Price Changes in Fifteen Months

PHAETON prices generally have increased during the last 15 months. Some decreases have been recorded, of course, but the trend has been upward very definitely. Coach prices on the other hand have remained about the same on the whole; that is, the number of increases and cuts in coach prices have been about equal since the first of 1924. Sedan prices have been raised in a good many more cases than they have been lowered during the same period. Add that to your stock of information that you don't know what to do with.

### Aluminum in Car Construction

ALUMINUM body panels are being used on 14 current passenger cars. The output of these makes totalled nearly 40,000 last year, although not all of this production consisted of aluminum panel bodies. Five companies this year are equipping their cars with duralumin connecting rods and 32 cars are using aluminum upper crankcases. These are facts developed in a survey just made by our research department. The survey shows also that aluminum pistons are being used in 27 of the 1925 models.

N. G. S.

# Comparative Tensile Properties of Aluminum Alloys

***Tests made on specimens cut from various parts of a crankcase casting show lower properties than separately cast specimens.***

*By E. H. Dix and A. J. Lyon
*Metallurgists, Engineering Division, U. S. Air Service*

IT is a well-known fact that separately cast test-bar results furnish insufficient information in themselves upon which to judge the relative casting qualities of aluminum casting alloys. Many alloys show good physical properties when cast in the simple shape of a test-bar, but fall far short of these properties when cast in a complex shape, due to internal stresses and porous or spongy metal.

Too often the designer does not consider the casting qualities of an alloy, and bases his choice merely on the physical properties obtained in separately cast test-bars, generally specification values. This is probably due to the lack of reliable data on the comparative physical properties to be expected in large castings.

It was to furnish such information to aircraft designers that the following investigation was undertaken by the Metallurgical Section of the Air Service.

The upper half of the Liberty 8 crank-case was selected as a representative casting, embodying thick and thin sections. Its approximate weight with risers attached was 100 lb. when cast in an 8 per cent copper-aluminum alloy.

The chemical analyses of the alloys from which the castings were made are given in Table I. The melt number will be used for purposes of identification throughout this paper.

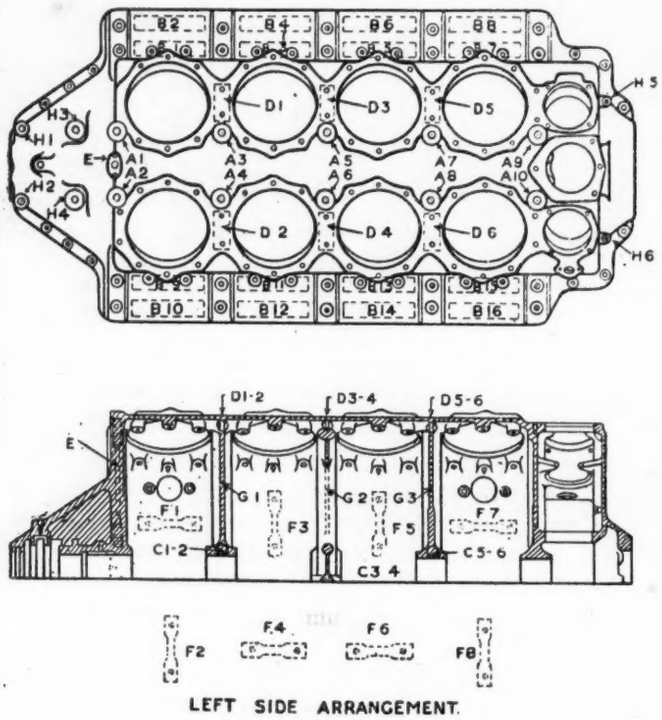



*Fig. 5—Location of test specimens in crankcase*

Alloys of melts Nos. 1487 and 1608 were mixed and the castings made by McCook Field Foundry, and the other two by commercial aluminum foundries.

**Table I**

| Foundry Melt No. | Alloy | Copper | Iron | Total Silicon | Combined Silicon | Graphite Silicon | Manganese | Magnesium |
|---|---|---|---|---|---|---|---|---|
| 1487 | A.S.Al No. 5 (Exp.) | 3.47 | 1.25 | 4.10 | ..... | ..... | ..... | ..... |
| 1608 | No. 12 | 8.06 | 0.74 | 0.78 | ..... | ..... | ..... | ..... |
| 1780 | Alpax metal | 0.02 | 1.15 | 12.72 | 4.86 | 7.86 | ..... | ..... |
| 2702 | Lynite 195 | 4.57 | 0.55 | 0.45 | ..... | ..... | 0.11 | 0.10 |

The methods of gating and of placing the risers on the four castings are shown in Figs. 1 to 4. Separately cast test-specimens ½ in. in diameter over a gage length of 2 in. were cast three in a mold, the individual specimens being fed by a common riser 1¼ in. in diameter and 3 in. in height at one end, and a pouring sprue of the same dimensions at the other. Test-specimens in the form of coupons were also cast from melts 1780 and 2702, as shown in Fig. 3.

For the manufacture of the alloys used in melts 1487 and 1608, the copper and silicon were introduced by the use of copper- and silicon-rich hardeners. The chemical composition of these and the aluminum ingot used are given in Table II:

**Table II—Metal Chemical Composition**

| | Copper | Iron | Silicon | Aluminum |
|---|---|---|---|---|
| Copper-aluminum hardener | 46.21 | 0.42 | 0.22 | 53.15 |
| Silicon-aluminum hardener | 0.30 | 1.23 | 50.68 | 47.79 |
| Ingot aluminum | 0.30 | 0.58 | 0.94 | 98.18 |

The procedure for the manufacture of the copper-silicon and the 8 per cent copper-aluminum alloy was to charge the required amounts of hardeners and aluminum ingot together in a No. 125 plumbago crucible and melt in a gas-fired crucible furnace.

Test-specimens cast to size in greensand molds, as described above, were poured from each of these melts and the balance pigged. The crankcases, which were molded in greensand, were then poured from the remelted ingots and additional test-specimens poured just before the castings. The pouring temperature was 1425 deg. Fahr. in both cases. The Lynite 195 crank-case was heat-treated subsequent to casting by the manufacturer.

No. 12 (8 per cent copper, 92 per cent. aluminum) is a widely used standard casting alloy. It, in common with most aluminum alloys, has a tendency to form shrinkage cracks and draws, and the Air Service has experienced

*Abstract of paper read before the Institute of Metals (Great Britain).

difficulty with this alloy cast in the form of large crankcases. The difficulty was overcome, but at the cost of increasing the weight of the casting and a high foundry loss from poor castings. The crank-case, however, cast in connection with this investigation, gave no trouble in the foundry, in spite of the fact that no chills were used.

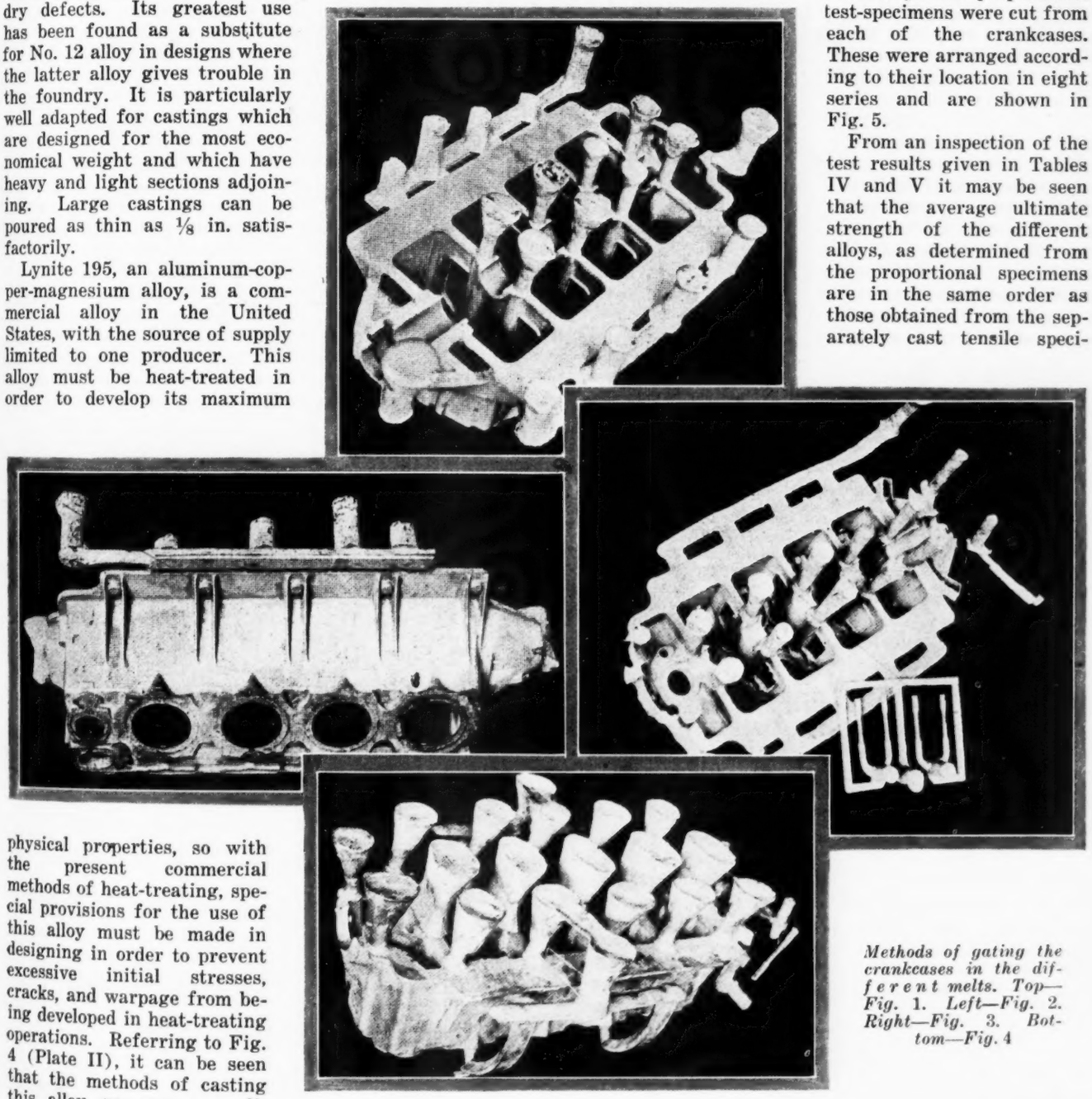
The copper-silicon aluminum alloy has the advantage over the No. 12 alloy in being free from excessive draws, cracks, and other similar foundry defects. Its greatest use has been found as a substitute for No. 12 alloy in designs where the latter alloy gives trouble in the foundry. It is particularly well adapted for castings which are designed for the most economical weight and which have heavy and light sections adjoining. Large castings can be poured as thin as ⅛ in. satisfactorily.

Lynite 195, an aluminum-copper-magnesium alloy, is a commercial alloy in the United States, with the source of supply limited to one producer. This alloy must be heat-treated in order to develop its maximum physical properties, so with the present commercial methods of heat-treating, special provisions for the use of this alloy must be made in designing in order to prevent excessive initial stresses, cracks, and warpage from being developed in heat-treating operations. Referring to Fig. 4 (Plate II), it can be seen that the methods of casting this alloy are more complicated than any of the other three alloys under investigation, and the casting made in this manner showed quenching cracks where the webs join walls of the crankcase, so that it would have been unfit for use. This would have been prevented by slight changes in design, but was not thought worth while for the purposes of this test. The greatest application for Lynite 195 is in castings of practically uniform section, where a saving in weight can be effected by using an alloy with superior physical properties.

Alpax, which is a modified 13 per cent silicon alloy of aluminum, has practically the same casting properties as the copper-silicon-aluminum alloy. Experience has shown that this alloy gives some trouble in the foundry, due to the presence of cavities in the form of worm holes in the heavy sections. It has a limited source of supply, and special manipulation is required for the modifying process.

Fifty-six proportional test-specimens were cut from each of the crankcases. These were arranged according to their location in eight series and are shown in Fig. 5.

From an inspection of the test results given in Tables IV and V it may be seen that the average ultimate strength of the different alloys, as determined from the proportional specimens are in the same order as those obtained from the separately cast tensile specimens, namely, Lynite 195, Alpax, copper-silicon-aluminum and 8 per cent copper aluminum. The results of the modulus tests, however, showed that the order or proportional limits (Fig. 6) is somewhat different. The 8 per cent copper-aluminum alloy is next to Lynite 195, followed by the copper-silicon aluminum alloy and the Alpax. Alpax in particular has a very low proportional limit, and since this property is a criterion on which the usefulness of the different alloys is determined for Air Service use, it is apparent that Alpax is unsatisfactory, since it is



*Methods of gating the crankcases in the different melts. Top—Fig. 1. Left—Fig. 2. Right—Fig. 3. Bottom—Fig. 4*

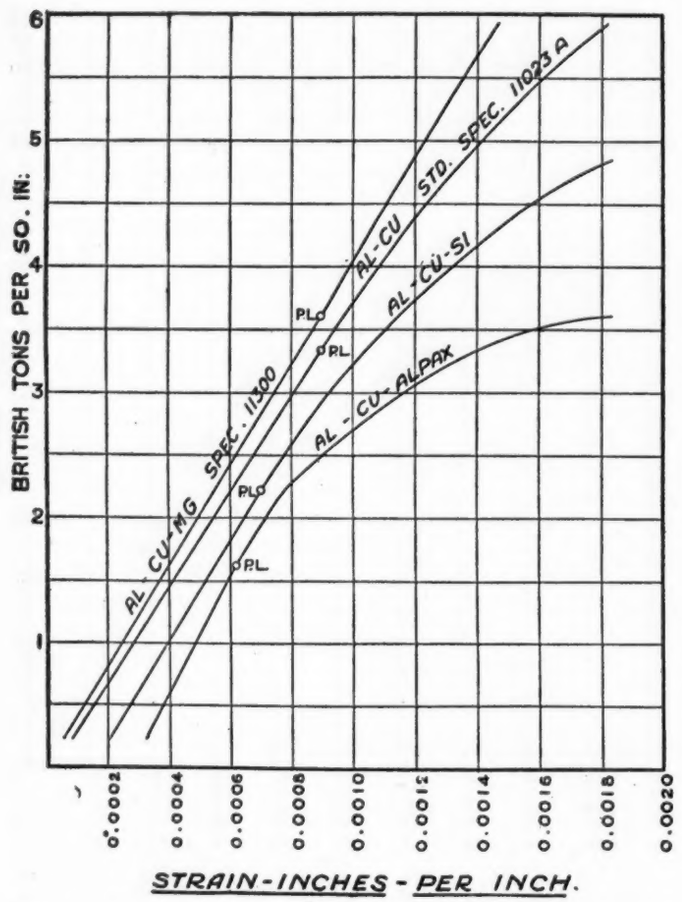



*Fig. 6—Stress-strain curves, specimens from center bearing supports*

impossible to take advantage of the relatively high strength and ductility on account of the ease with which it deforms under load.

In connection with the foundry technical control it has been observed that, in the alloys of straight copper-aluminum type, the removal of the surface skin from the separately cast test specimen results in a reduction of the ultimate breaking strength of 20 to 25 per cent, while the effect of removing the skin or machining the specimens from the copper-silicon-aluminum alloy results in practically no reduction in strength. The results of the tests of the proportional specimens taken from the crankcase show practically the same relation to the separately cast specimens—namely, Lynite No. 195 shows a reduction of 24 per cent, the No. 12 alloy and Alpax 21 per cent, while copper-silicon alloy shows a reduction of only 4 per cent. This accounts in part for the difference between the separately cast test specimens tested with the skin on and the machined specimens from the castings.

Analyzing the physical results obtained on the specimens taken from different parts of the crankcase, it may be seen that Lynite 195 gives the most uniform values throughout. This would be expected, since the crankcase was heat-treated subsequent to casting. Specimens taken from outside walls of the crankcase and from the thin web between the bearing bosses showed the most consistent and highest results for copper-silicon-aluminum alloy, while the results of the other three alloys are not as consistent and are below the average values. The specimens taken from the bearing support bosses show results which are below average for all of the alloys, and in case of the copper-silicon, 8 per cent copper and Alpax, the metallographic examination showed that those sections were not sound, due to the relatively greater mass and slower cooling. The slow rate of solidification is probably responsible for the low properties.

Table III gives a summary of the comparative physical results obtained on separately cast tensile specimens and on the proportional specimens cut from the crankcases.

TABLE III.

| Alloy | *B* Test-Pieces from Crankcases | | | *A* Separately Cast Test-Pieces | |
|---|---|---|---|---|---|
| | Limit of Proportionality. Tons per Sq. In. | Maximum Stress. Tons per Sq. In. | Elongation on 2 in. Per Cent | Maximum Stress. Tons per Sq. In. | Maximum Stress. B. / Maximum Stress. A. |
| No. 12..... | 3.42 | 6.62 | .... | 7.99 | 0.82 |
| Cu-Si..... | 2.39 | 7.97 | 1.4 | 8.39 | 0.95 |
| Lynite 195.. | 3.68 | 11.00 | 2.4 | 14.21 | 0.77 |
| Alpax..... | 1.65 | 8.89 | 3.7 | 11.15 | 0.79 |

From the results of the investigation summarized herein it has been concluded that the copper-silicon-aluminum alloy is particularly well adapted for complicated castings which do not require a large amount of machining. In many parts used in the construction of aircraft engines, such as crankcases, manifolds, cover plates, and housing, very little machining is required, and the finishing of the castings can practically all be done on a milling machine. This copper-silicon alloy is particularly well adapted for this type of work, and is recommended as a substitute for the No. 12 alloy wherever foundry difficulties due to shrinks, draws, and cracks offer serious difficulty.

TABLE *IV.—Summary of Results on Specimens from Crankcases.*

| Location | No. 12 | | Cu.-Si.-Al. | | Alpax | | Lynite | |
|---|---|---|---|---|---|---|---|---|
| | Ultimate Stress. Tons per Sq. In. | Elongation Per Cent on 2 In. | Ultimate Stress. Tons per Sq. In. | Elongation Per Cent. on 2 In. | Ultimate Stress. Tons per Sq. In. | Elongation Per Cent on 2 In. | Ultimate Stress. Tons per Sq. In. | Elongation Per Cent on 2 In. |
| Bearing support bosses. | 6.04 | .... | 7.02 | 0.81 | 9.40 | 4.3 | 10.90 | 2.9 |
| Center bearing support boss..... | 5.74 | 0.25 | 6.59 | 0.63 | 8.78 | 4.0 | 10.58 | 1.68 |
| Flange..... | 7.69 | .... | 8.16 | 1.5 | 8.13 | 2.9 | 11.13 | 3.0 |
| Bottom web to center bearings..... | 8.20 | .... | 9.24 | 1.5 | 10.30 | 4.9 | 10.81 | 2.4 |
| Between cylinder flanges | 5.63 | .... | 6.55 | 1.5 | 9.56 | 5.1 | 10.20 | 2.8 |
| Boss between A1 and A2 | .... | .... | 6.812 | 1.00 | 8.77 | 4.5 | 11.77 | 3.5 |
| Outside walls of case... | 6.34 | .... | 9.13 | 1.8 | 7.40 | 2.6 | 10.44 | 1.8 |
| Thin web between bearing bosses..... | 4.38 | .... | 10.05 | 1.5 | 9.05 | 3.3 | 9.90 | 1.7 |
| Bosses at opposite ends of case..... | 5.24 | .... | 7.61 | 1.1 | 10.37 | 5.0 | 10.99 | 3.8 |
| Grand Average..... | 6.62 | .... | 7.97 | 1.4 | 8.89 | 3.7 | 11.00 | 2.4 |

TABLE *V.—Results of Tests on Separately Cast and Coupon Specimens.*

| | 3 per cent Copper | 4 per cent Silicon | 8 per cent Copper | | Alpax Metal | | Lynite 195 |
|---|---|---|---|---|---|---|---|
| Melt No..... | 1486 | 1487 | 1608 | 1069 | 1780 | 1780 | 2702 |
| Tensile stress (tons per sq. in.)..... | 8.749 | 8.392 | 8.709 | 7.996 | 11.450 | 10.848* | 14.213* |
| Elongation (per cent in 2 in.)..... | 1.5 | 2.0 | 2.0 | 1.5 | 7.25 | 3.5 | 5.25* |
| Rockwell hardness (⅛-in. ball)..... | 33 | 28 | 41 | 46 | 41 | ..... | 55 |
| Brinell hardness (500 kg. load, 10-mm. ball) | 50 | 18 | 52 5 | 52 | 55 | ..... | 68 |
| Scleroscope hardness... | 12 | 12 | 17 | 18 | 20 | ..... | 22 |
| Specific gravity..... | 2.724 | 2.703 | 2.825 | 2.78 | 2.826 | ..... | 2.777 |

*Results from specimens attached to Lynite and Alpax crankcases.

TABLE *VI.—Chemical Analyses.*

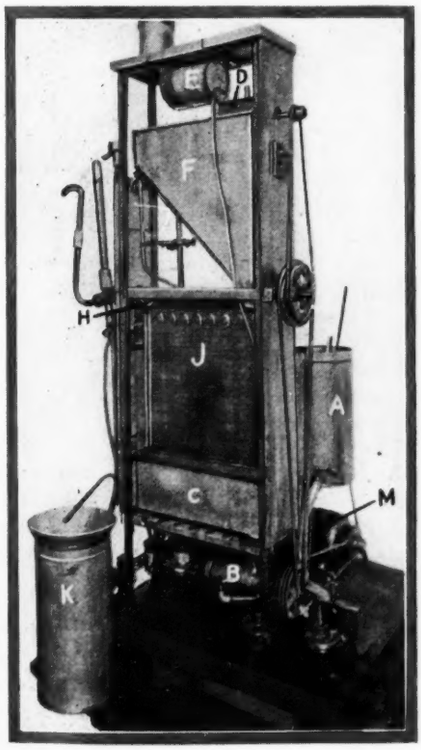
| Melt No. | Copper | Iron | Total Silicon | Combined Silicon | Graphitic Silicon | Manganese | Magnesium |
|---|---|---|---|---|---|---|---|
| 1487 | 3.47 | 1.25 | 4.10 | .... | .... | .... | .... |
| 1608 | 8.05 | 0.74 | 0.78 | .... | .... | .... | .... |
| 1780 | 0.02 | 1.15 | 12.72 | 4.86 | 7.86 | .... | .... |
| 2702 | 4.57 | 0.55 | 0.45 | .... | .... | 0.11 | 0.10 |

# General Electric Men Perfect Apparatus to Reclaim Crankcase Oil

**Process said to remove fuel diluent, metallic particles due to wear, road dust and products of combustion, and to restore original lubricating properties of used oil.**

A CRANKCASE oil reclaiming apparatus for use by service stations and fleet owners has been developed in the research laboratory of the General Electric Co. by Charles Van Brunt and P. Schuyler Miller. It is claimed to remove fuel diluent, metallic particles due to wear, road dust and products of combustion, and to restore the original lubricating properties.

The reclamation process includes clarification by agitation with a small amount of silicate of soda, or water glass, and other chemicals, and rectification, in which the oil is run in a thin film over a heated surface in a current of air. The oil is first heated by contact with the exhaust pipe, and is then delivered to the mixing tank, where the chemicals are added. From there it goes to the settling tank or clarifier, and then to the heated rectifier,




*Oil reclamation apparatus*

where it is refined and purified. The completely reclaimed oil is then led to storage tanks.

A continuous reclaimer, with a capacity of nine gallons in 24 hours, is automatic in operation and can keep the oil for 30 engines, of five quarts capacity each, in good condition indefinitely. The complete machine is so designed that, by removing the side panels, any number of units can be assembled side by side and driven by the same source of power, thus enabling the capacity to be increased as desired. A 100-gallon installation of 12 units would thus occupy a floor space about 15 by 50 inches, exclusive of feed and receiving tanks and motor. A single larger unit can be built, but difficulties of even distribution over the rectifier plates would increase with size. The apparatus can be operated without technical control. Electric heat is used.

### Reclaimed Oil More Stable

Reclaimed oil is more stable than the original oil, for the reason that the less stable constituents are broken down when the lubricant is first used and are removed by the reclaiming process. The oil is of darker color than the original, but can be readily bleached by Fuller's earth. The bleaching process is not recommended, however, since it is believed that the portion thereby removed has the best lubricating properties.

One of the inventors has used reclaimed oil in his automobile for three years, and in that time traveled 16,000 miles. Reclaimed oil was used in one car for 5000 miles, transferred to a second automobile and used for an additional 11,000 miles. The original oil—with additions from time to time to replace consumption—is still in use and gives promise of indefinite life. Carbon deposits appear to be less than with fresh oil, and are softer and more easily removed.

## Evolution of the Machine Shop

MACHINE shops were originally general engineering shops (says Frank G. Woollard in an I. A. E. paper), and, for convenience, similar machine tools were grouped together. From that there grew up an idea that foremen could best manage shops in which there were similar types of tools. This persisted even when engineering shops were placed on a repetition basis, but with the advent of the automobile it became evident that this arrangement involved a great deal of transport, and when, as frequently was the case, every part at each operation was taken to a central inspection room, the old arrangement became unwieldy. So machines were arranged for the work to flow naturally from place to place, and inspectors were placed at intervals in the shop. The foremen became so much more versatile, and only certain complicated machines, like gear cutters and automatics, were grouped. Now, when the layout calls for it, even these can be found "in line" with the other plant. The conveyor system is now making itself felt, but this is only feasible on anything like a large scale, on large outputs where a settled manufacturing policy is in force. There is a tendency, in large scale manufacture, to group all of one operation in one shop, so that the shops rather than the machines are in line, but this does not suit the smaller productions. Methods suitable for such aim at putting down "continuous machines" to look after a certain output and putting down parallel lines as more production is required.

# Unit Container System of Freight Handling Developed by Mack

***Containers constructed of aluminum offer advantages of lightness and durability. Built in sizes for flat cars and box cars. Change at terminals effected by use of ramps. System saves time and labor.***

FOR some years the use of unit containers for shipping various classes of merchandise by motor truck, railroad and steamer has received considerable attention in the shipping world. A very large proportion of all the freight shipped by railroad and steamships must be handled by motor trucks at the terminals, and with the present system this not only involves repeated loading and unloading, which is a waste of labor, but the transportation equipment must be kept idle while this loading and unloading is going on, which is another economic waste.

With the unit container system, these containers, which are comparatively large metal boxes, are loaded and sealed by the shipper, are transported to the railroad terminal or wharf on motor trucks, thence by railroad or steamer, and finally delivered to the consignee on motor trucks. The containers are never opened from the time they leave the shipper's plant to the time they arrive at their destination. Of course, equipment for handling the containers must be provided at the shipping point and destination, as well as at the various transfer stations, such as railroad freight yard and dock.

It appears that these containers were first successfully used between London and Paris for handling mails and baggage. For some years past the New York Central Railroad has been experimenting with container cars and has operated several of them between New York, Chicago and intermediate cities. The containers are loaded on the station platform and hoisted on motor trucks, which run to the station yard. There the containers are placed on a special car.

At the destination the transfer operation is reversed and the container is unloaded at the consignee's door.

Two chief problems arise in connection with this container system. The first consists in designing containers which, while comparatively light, will be strong and durable, and the second in developing the necessary mechanism for rapidly transferring the containers from the loading platform to the truck and from the latter to the freight car or the steamship hold. These problems have been taken up by the International Motor Co., manufacturers of Mack trucks, who have developed an aluminum alloy container as herewith illustrated. The container is made practically throughout of an aluminum alloy of the duralumin type, with the result that its weight is only very slightly over 15 per cent of the maximum weight of merchandise it is designed to hold.

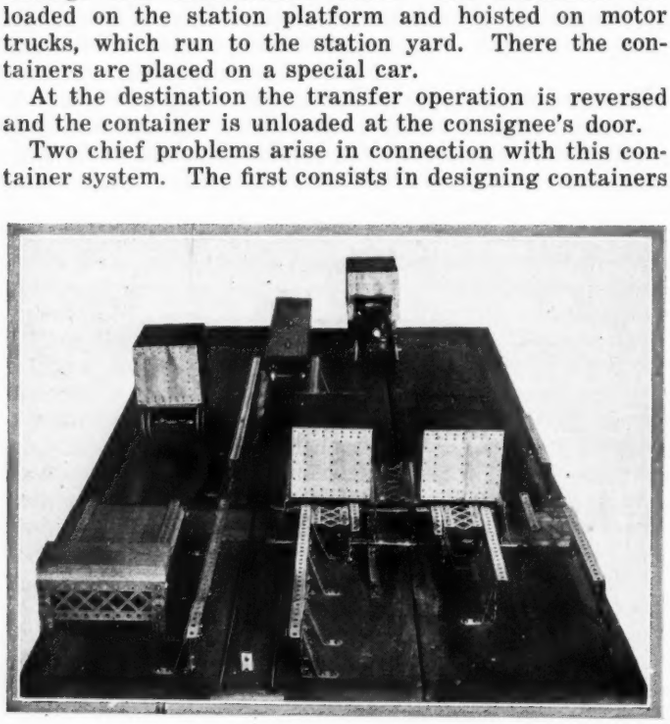


*Photo of model designed to illustrate installation for the transfer of containers from flat car to truck platform*

## Standardization Essential

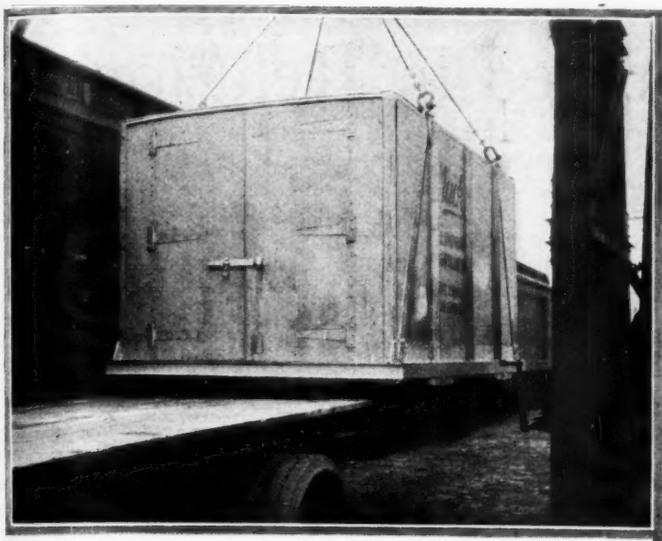
In order to realize the full advantages of the container system it is necessary that all of the equipment be standardized. The Mack container is 12 ft. long, 7 ft. 4 in. wide and 6 ft. 3 in. high, internal dimensions. One of these containers constitutes a load for a 7½-ton truck and three of them are a load for a flat car. It has been found, however, that these containers are too large for many shippers, and it has been decided therefore to also make a smaller container of one-half the size of the standard one. These smaller containers are so proportioned that they will enter the door of a standard box car, and by means of pivotally mounted wheels they can be readily moved toward either end of the car.

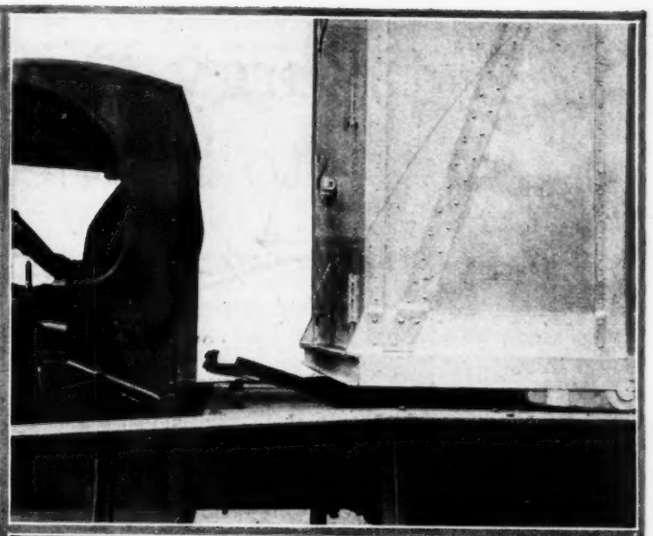
The International Motor Co., of course, is concerned most with the means for placing the container on the truck and unloading it therefrom, and for holding it securely on the truck platform while under way, and these have been worked out in detail. The container is loaded while on a ramp track, an illustration of which is shown. The horizontal portion of the ramp track is slightly higher than the truck platform and the truck therefore can be backed under the container. A pair of guard rails are fastened to sleepers in the ground to facilitate this operation and prevent injury to the supports of the ramp track.

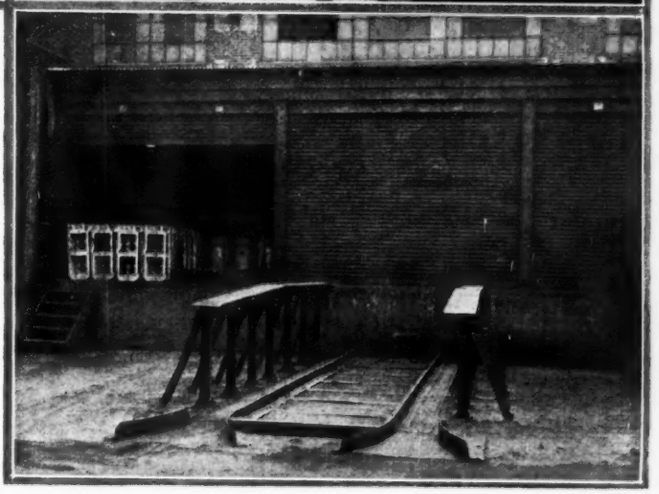
## Special Fittings for Trucks

Mack trucks fitted up for use with containers have a coupler installed at the center of the platform near the cab and a locking device at each of the four corners of the platform to lock the container to the truck while it is being transported from terminal to terminal. This equipment is so designed that it does not interfere with the use of the truck for other work, and stake holes may be provided in the platform to permit of the conversion to a stake body.

The coupler and locking device are shown in one of the accompanying cuts. The long inclined lever at the center of the platform is the coupler, while the projecting blocks on opposite sides of it are the locking devices. Within these blocks there are latch bolts which can be caused to move out from the shell and grip the end frame rail of the container.







*Above—Container being raised by crane in railroad yard. Right—Truck being backed under container, showing coupler and locking device. Below—Ramp track at shipping platform*

It will be noticed that the container has hinged double doors at both ends, through which it is loaded. Four bails are provided at the top for the easy attachment of crane cables for hoisting the container on board ship.

In addition to the ramp track for loading platforms, above described, designs have been worked out and models constructed of a transfer station for railroad yards which makes it possible to transfer containers from truck to flat car and vice versa without backing the truck into a ramp track. A photograph of a model of one of these stations is reproduced herewith. The ramp track for the flat car is open at both ends and the car can be run right into it. A section of the ramp track at the center is capable of transverse motion and can be moved in line with a parallel track into which a truck can be run, or in line with a platform on which the container can be placed and whence it can be readily transferred to an industrial truck.

### System Big Time-Saver

The chief advantage of the system of unit containers is the improvement in the utilization of the transportation equipment which it makes possible. Loading and unloading of the truck consume a minimum of time, and time loss at terminals due to congestion is also eliminated. Moreover, the container can be unloaded by ramp track directly on to the warehouse floor and can be moved around or on to an elevator on its roller-bearing wheels to the most advantageous point for unloading the merchandise.

Material advantages would also accrue to the railroads from the introduction of the unit container system. It would make it unnecessary to have the roadway to loading platforms blocked by waiting trucks and to have the platform piled high with general freight lying around awaiting segregation, and a single container unit could be used instead of a box car for the average shipment of less than carload freight.

The International Motor Co. has installed loading and unloading equipment at its factories in Plainfield and New Brunswick, N. J., and introduced the system there.

# Metallurgy Discussed in Relation to Service Problems

**Defects in steel generally due to dirt inclusions, says L. A. Danse in paper presented before Metropolitan Section of S. A. E. Dangerous to straighten parts bent in accidents.**

"ALL steel is dirty, but some much less so than other," was one of the generalizations made by L. A. Danse, metallurgist of the Cadillac Motor Car Co., in a paper presented before the Metropolitan Section of the S. A. E. on Thursday of last week.

The talk started with an outline of the steps in the production of steel from the prospecting for the ore to the rolling of the bar stock in the mill, each step illustrated by lantern slides. The title of the paper was "Metallurgy Pertaining to Service Problems," the Metropolitan Section's policy being to secure papers on topics of interest to service men, who, naturally, are more largely represented in the membership than men connected with engineering and production activities.

Mr. Danse said that iron is a great deal like water. Like water it can exist in three different states, solid, liquid and gaseous. If we lived in a "temperature plane" of 2800 deg. instead of 65 deg. we probably would be made of asbestos and swim around in liquid iron. When the temperature decreases from that in which iron exists in the liquid to that in which it exists in the solid state, crystallization takes place, the same as frost crystals form in water when the atmospheric temperature drops below freezing. The frost crystals often are of very pleasing appearance, something like fern leaves. Iron crystals are similar in form and the structure formed when iron crystallizes is known as denditric.

### Does Not Crystallize in Service

Iron therefore is always crystalline, and the notion that it crystallizes in service is erroneous. Parts may fail through fatigue but not through crystallization. It is possible to rearrange the crystalline structure after the iron has cooled down, but only by thermal or mechanical treatment.

Steel is really far removed from iron, consisting of a complex alloy of this element. In addition to carbon it often contains as many as half a dozen metalloids.

In presenting slides from the steel mills, Mr. Danse explained that after the ingot is made it is reduced to blooms by a hammering or rolling process, and the blooms are later rolled into bars and rods. In each operation the block is reduced in cross section and elongated. This results in distortion of the crystalline structure and the formation of flow lines or flow marks.

Numerous slides were shown of faults in steel that had been discovered in the laboratory and of pieces that had failed in service. A section of a steering arm was shown that had been bent in a collision, after which a repairman had attempted a repair by cold-straightening it, with the result that it later broke in service. Mr. Danse explained that automobile parts that were deformed in collisions, etc., should never be cold-bent, as this would inevitably lead to disaster. When the piece was bent in the accident the material was subjected to stresses beyond its elastic limit. This carried the elastic limit closer to the ultimate breaking strength. When the piece was then bent back to shape it was again stressed beyond the elastic limit, with the result that this limit was again moved closer to the breaking point. This probably brought the two points so close together that the next time the piece was stressed beyond the elastic limit it broke.

### Overheating Just as Bad

A section was also shown of another steering arm which had been bent in an accident and which the repairman had tried to save by bending it back to shape after heating it. He overheated it, as shown by the coarse grain structure of the section, and it broke. Mr. Danse said that whenever a part of this kind was bent the only safe procedure was to fit a new one.

When iron solidifies it shrinks, and this causes a pipe at the center of the ingot near the top. Just below the pipe there is generally an accumulation of dirt. Enough of the top of the ingot should be cropped or cut off and returned to the furnace so that all imperfections are removed before the ingot is put in the rolls. Mills that aim at quantity rather than quality often shear off too little of the top and this results in imperfections in the rolled bars. In this way sometimes 50 to 60 ft. of defective rod is produced.

When a section of the ingot is polished and etched and the surface is then photographed, the crystals near the outside, where the iron cooled more rapidly, are generally of a different formation than those near the center. This is known as ingotism.

### Must Have Large Fillets

An I-beam is one of the most difficult parts to forge, and in order to cause the steel to flow readily the forgeman is likely to heat it to too high a temperature and overheat it, as the higher the temperature the more plastic the steel. A photograph was shown of an I-beam which through overheating had suffered such deterioration of structure that it had fractured when being dropped on the floor. The fracture showed a coarse crystalline structure. In general, the finer the grain of a piece of metallic material the better its mechanical properties.

An I-beam must be provided with large fillets, otherwise it is difficult to forge. The section must also have enough draft. It is fine to say 7 deg. is enough, but 10 deg. may be better.

A section of a broken propeller shaft was shown which was found to be defective due to insufficient cropping of the ingot. That is, not enough of the top of the ingot had been sheared off and the dirt accumulated there

had been rolled into the bar. A section of a spring shackle was shown which was proved to be defective because the grain flow in some parts was not in the direction of the stresses. The fracture showed a coarse crystalline structure and Mr. Danse estimated that the material included something like 15 per cent of dirt.

The author, speaking of graphite as an abrasive, said that the graphite in cylinder iron crumbles out on the ground surface of the cylinder bore and smooths over the protruding particles of ferrite (iron), which is the reason why cylinder bores can be run in in a comparatively short time.

A solid solution of 0.85 per cent of carbon in iron is a saturated solution which is known as the eutectoid, and if any more carbon is present the excess settles out.

It is sometimes attempted to weld broken front axles of the drop forged I-beam type, but this practice is entirely wrong. The material which is deposited at the joint by the acetylene torch or the electric arc is cast metal, which is never as strong as heat-treated forged metal. Mr. Danse showed a section of a butt weld in which the surfaces of the weld had not been properly cleaned, so that a layer of dirt separated the two parts and the weld, in consequence, was a weak one. To make a high class butt weld it is necessary to force the parts welded together under pressure after they have been brought to the welding temperature, whereby any dirt on the abutting surfaces is forced out in the flash.

### Prefers Up-set Gear Blanks

Mr. Danse is an advocate of gear blanks made in up-setting machines. One advantage of these blanks is that if there are any imperfections in the stock due to insufficient cropping, these come in the center of the gear or cluster and are drilled out. On the circumference where the teeth are cut the grain flow is uniformly radial, which insures teeth of equal strength. Formerly Mr. Danse's firm made gear blanks by the "pegging out" process, in which the grain flow was radial at two points of the circumference and transverse at intermediate points, and whereas it took 250-260 foot-pounds of energy to break off the teeth with radial grain flow, it took only 80-90 foot-pounds to break off the teeth with transverse grain flow.

Photographs were shown of a camshaft, the surface of which had cracked in hardening. This was explained by stating that the camshaft while being carburized had absorbed an excess of carbon, and some of the surface layer of highly carburized steel had even flaked off. A micro-photograph of the surface of a ground camshaft was thrown on the screen, the photograph having a magnification of 100 diameters. In the words of the author, the surface looked like a plowed field. One of the reasons for the roughness of such a surface is that the grinding operation heats the surface particles and the water thrown onto the surface immediately afterward chills them.

### "Raisin Bread Steel"

A micro-photograph of a piece of silico manganese steel was thrown on the screen which showed rather large and uniformly distributed dirt inclusions, and the author said they referred to it in the laboratory as raisin bread steel. One of the samples, he judged, contained 10 per cent of dirt.

All axle shafts used in the Cadillac car are given a torsion test which consists in applying to them a torque of 32,000 lb.-in.—1000 lb.-in. more than they are ever subjected to in service, which torque twists them through an angle of about 25 deg. About 15 per cent of the shafts are unsatisfactory and must be rejected.

Mr. Danse said that a certain steel maker at one time very highly recommended to them his bolt stock, and he was given a trial order. When the stock was turned it was found to be not round but polygonal, which was found to be due to dirt inclusions.

A micro-photograph was also shown of a piece of bearing bronze, and it was explained that its good bearing qualities were due to the fact that it consists of a soft matrix in which the harder crystals are embedded. Ordinarily the metallic surfaces of the journal and bearing are kept apart by the lubricant, but if, through a sudden increase in pressure, the metallic particles should come in contact, no injury will be done, because the hard crystals of the bearing metal are cushioned by the soft matrix. Brass is absolutely worthless as a bearing metal, as it is of homogeneous texture and lacks the soft matrix.

### No Uniformity of Practice

During the discussion Mr. Danse said that there is as yet absolutely no uniformity of practice in the sheet steel field. His firm had devised a code of finishes for sheet steels which would be incorporated in the G. M. C. standards. There was as yet no satisfactory test for sheet steels. On gears the impact test is used, as well as a full load running test extending over 100 hours.

A question was asked as to the author's practice in obtaining specimens for metallographic analysis of blooms. He said they requested the steel maker to cut ⅝-in. sections from the first, middle and last bloom of the ingot. This square section was then saw-cut through the center and from one half was cut a strip near the sawed edge. From this strip a square section was cut and one corner of this square section served as the test specimen.

Formerly, when making fatigue tests, the specimens were polished, but it was found that this was not a good plan, as the tests would give better values than were obtained in practice, and now the test specimens are finished in exactly the same way as the part from which they are cut.

### Cylinder Finishing Methods

The method of cylinder finishing was also touched upon by Mr. Danse. He said that they could make a beautiful surface by means of the lap, but they had not yet found how to make a lapped cylinder true. The average depth of the scratches in a lapped surface is only about one-third that of scratches in a ground surface.

Further reference was made in the discussion to the difficulties involved in the forging of I-beam sections, and Mr. Danse said the Ford Motor Co. had recently adopted cross section connecting rods in order to avoid these difficulties. An English metallurgist studied the flow of metal in dies by making a mass of wax composed of alternate layers of white and red wax and forcing it into dies of the same form. The flow lines could then be plainly seen after the "forging" had been sectioned.

Mr. Manly said that cold straightening of airplane engine crankshafts gave a great deal of trouble during the war, and orders were given in 1917 in connection with Curtiss airplane engines that no more cranks were to be cold straightened. The defects which it was sought to rectify by cold straightening were due to warpage in hardening. This meant that there were already defects in the shaft and these were magnified by the cold straightening process. The shafts usually broke through the fillets. No more trouble was experienced thereafter.

# DEVICES OF INTEREST

## "Bulldozer" Grease Gun

SOME new features are embodied in a high pressure grease gun for chassis lubrication which was invented by C. O. Bedford and is to be marketed as the Bulldozer grease gun by the Bedford Lubricating Co., New York. It comprises a steel cylinder with a nose cap of aluminum alloy and a bronze cap at the head end. Within the steel cylinder there is a low pressure piston assembly comprising two leather cup pistons of which one is fixed to the tubular plunger while the other is free to move toward and away from the former within limits, the two being normally held apart by a coiled spring between them.

Supported on the cap at the head end are two drag locks, one inside and the other outside the cylinder. These consist essentially of steel washers of an internal diameter slightly larger than the diameter of the tubular plunger. These drag locks are hinged on one side and are held in certain positions by coiled springs. The one on the inside of the cylinder is normally held by a coiled spring on the outside of the head (not shown in the drawing) in a canted position so it grips the tubular plunger and prevents it from being forced out of the cylinder by the pressure of the grease, or, rather, the pressure of the coiled spring between the two leather cup pistons.

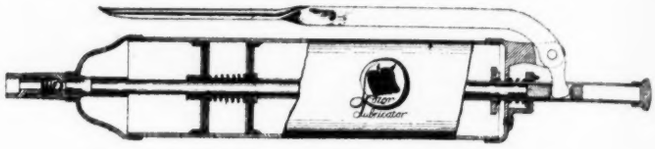
When it is desired to fill the gun with grease the nose cap is unscrewed, the barrel of the gun is stuck into the grease, the inside drag lock is unlocked by pressing on a knob on the outside of the head end cap and the tubular plunger which is provided with a convenient knob for the purpose, is pulled out from the gun. This causes the low pressure pistons to draw the gun barrel full of grease, and the nose cap is then replaced.

Within the tubular plunger carrying the low pressure

*Bulldozer grease gun with hose*

pistons is located the high pressure piston. This is operated by a sort of pump handle (as shown in the drawing) giving a leverage of about 12 to 1, the plunger being slotted on one side to permit the upper end of this handle to pass and engage the high pressure piston. This piston is ⅜ in. in diameter and has an effective feeding stroke of about ½ in. It works in a cylinder screwed into the nose cap and forces the grease through the ball type check valve. When at the inner end of its stroke this piston uncovers the ports in the wall of the high pressure cylinder and this cylinder is then filled with grease by reason of the pressure exerted on the grease in the low pressure compartment by the bloating leather cup piston.

When the operating lever approaches its outermost position its shorter arm cants the drag lock on the outside of the cap, causing it to engage the plunger so that during the remainder of the stroke the low pressure pistons also are moved forward. Thus the spring between the floating



*Section of Bulldozer high pressure grease gun*

and the fixed pistons is constantly kept under pressure, which pressure serves to to force the grease from the low pressure compartment into the high pressure cylinder.

The gun holds 1¼ lbs of grease, which is said to be sufficient to pack more than one hundred average sized bearings. Pressure of up to 5,000 lbs. p. sq. in. can be obtained on the grease. A single stroke of the lever serves to force the grease from the low pressure to the high pressure chamber and out of the latter. From the nozzle the grease is forced through a short length of braided hose connected by a universal swivel to the nozzle. After the connection is made the gun can therefore be turned in any direction without straining the hose appreciably.

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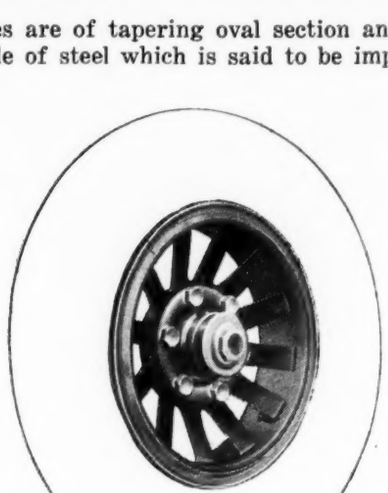
## New Steel Spoked Wheel

A NEW type of wheel for high-speed passenger and commercial vehicles is being marketed by the Motor Wheel Corp., Lansing, Mich., under the trade name of Spoksteel wheel. It is claimed for this new wheel that it overcomes certain difficulties which heretofore have been encountered in the use of pressed steel wheels on buses and trucks.

The spokes are of tapering oval section and are rolled from a grade of steel which is said to be impractical for

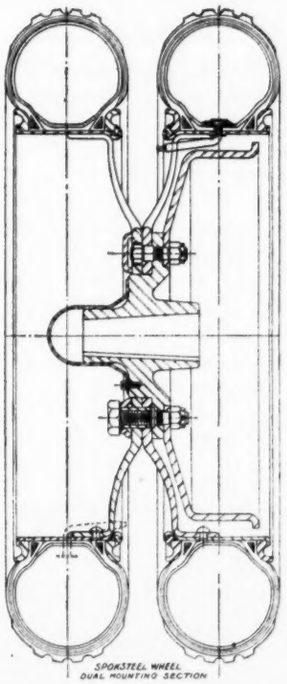


*Single Spoksteel wheel complete with tire*

# TO THE MANUFACTURER

pressing into disk form. It is claimed for the process of manufacture that it permits of accurate distribution of the metal, thus insuring a good balance and maximum strength for a given weight. Practically all of the metal which enters the factory for any particular wheel appears in the finished product. The spoke ring can be heat treated at minimum expense and without trouble from distortion, it is claimed.

The combination of rational distribution of the metal, the use of a comparatively high carbon steel and heat




*Sectional view of dual Spoksteel wheel*

treatment results in a wheel that is quite light, in view of its strength. Reduction in weight is particularly important in road wheels, because wheel weight is unsprung weight and greatly affects tire wear. The spoked construction also facilities mounting and demounting. It is easy to grasp the wheels by the spokes and to turn them, and the hub studs are in plain view as the wheel is being applied.

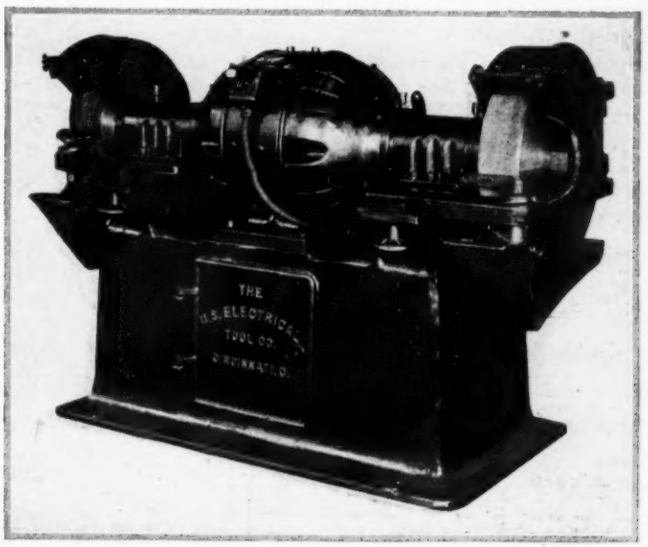
Another difficulty heretofore encountered in demountable wheels is said to be overcome in this new design. The rolled taper spokes permit of maximum thickness of the hub flange, which makes it easier to secure a positive wheel drive. The lock nuts, in conjunction with the spring locking flange, clamp against the hub flange in such a manner that very little driving stress comes on the studs, and the increased thickness of the hub flange makes it easy to take care of this. The spring of the locking flange tends to keep the nuts tight and in tension.

Owing to the use of heat-treated steel of comparatively high carbon content the spokes are capable of great elastic deflection without permanent set. However, should the wheel be deformed in an accident it is possible to straighten it on an anvil without special appliances. Breakage of the spokes is said to be practically impossible.

Spoksteel wheels are made in the convex form for dual mounting and in the concave form for single mounting. The wheels are at present being turned out to take any pneumatic tire of 20-in. base diameter and of from 5 to 8 in. section diameter, either single or dual.

## Development in Electric Grinders

AN electric grinder which runs at substantially constant peripheral speed whether work is being done or not has been developed by the United States Electrical Tool Co. of Cincinnati, O. The motor control is connected to the movable guard, and when the guard is pushed back to gain access to the face of the wheel the speed is automatically increased. Applying the work to the wheel will then bring the speed down again. Among the advantages claimed for this grinder are that it increases production and saves wheel cost. The motor is a 40 deg. completely enclosed type, equipped with push button control. A heavy one piece nickel steel spindle is mounted on four annular ball bearings. Hinged door type guards make the wheel quite accessible.




*U. S. electric grinder with automatic speed control*

## Standard Colors for Foundry Patterns

A JOINT committee on pattern standardization consisting of representatives of national organizations of pattern makers, founders and consumers of castings, has adopted a standard practice for painting patterns from which castings are to be made. Surfaces to be left unfinished are to be left black. Surfaces to be machined are to be painted red. Seats of and for loose pieces are to have red stripes on a yellow background. Core prints and seats for loose core prints are to be painted yellow. Stop-offs are to be indicated by diagonal black stripes on a yellow base.

# Turkey as a Market for the

BY reason of the wretched railroad system on the one hand, and the extent of the territory she possesses on the other, Turkey presents to the foreign manufacturer a market which would seem to have most favorable possibilities in the near future.

Constantinople alone as the center of a population of about two million, should prove an excellent market for the sale of automobiles.

In this city, straggling for a considerable distance, there is a great lack of rapid means of getting from one place to another. Beyond the few car lines which serve the main thoroughfares, and the Metropolitan which, running over a track about half a mile long, joins the Galata district to that of Pera, there are no other systems of public transport, and the crowds which endeavor to avail themselves of these means of getting about are so great that many people give up all attempt to board the cars.

In the days before the war the automobile was considered only as the vehicle of the rich, and the number in use in Constantinople was very limited. A few specimens of the best-known makes were to be seen, and the richer Turks then seemed to favor French cars in the main, says a French official report.

Since the war, conditions have greatly changed. Up

USE of motor vehicles by Turks is increasing. Constantinople alone, with population of two millions, a big field.

to 1918, of course, the Germans and the Austrians had matters all their own way. Also, before they left at the conclusion of hostilities they sold the automobiles which had been used in military service, an example which was copied by the Allies when they in turn ceased their occupation of the city.

Apart from the number of cars which became available in this manner, immediately after the armistice large numbers of American automobiles were imported and enjoyed great popularity on account of their moderate prices. All other foreign makes were squeezed out of the market for the time being with the exception of one well-known Italian automobile, the manufacturers of which established a branch of their Turin works in Turkey and made great sacrifices in prices to obtain a share of the business going.

### Many Models Kept on View

This firm has now a well-established trade. It has installed a large garage, does a considerable amount of repair work and has established a chain of depots at which spare parts can be purchased. In 1924 it sold 120 touring cars, besides supplying 60 motor fire engines for use in various provincial towns. It is certain, however, that the Turkish automobilists have not bought these vehicles so much on account of their design or their technical quality as because a large number of models suitable for various purposes have always been on view, and it has been possible for the potential buyer to obtain immediate delivery.

A French manufacturer, recognizing the difficulties which always arise when the central agency is trusted to the hands of a native firm, also established his own business at Constantinople and has obtained satisfactory results, having sold so far about 60 touring cars and 120 light trucks. A project is also now on the way to realization whereby several French manufacturers are to be represented by a company specially formed for the purpose.

Automobiling is a means of locomotion which tends to become more and more democratized, to become increasingly popular with the middle classes, and in considering the possibilities of the market particular attention must be paid to this tendency. What the market requires is an automobile which unites the qualities of simplicity of construction, strength, easy running and low price, mainly the latter.

What is chiefly needed to popularize the use of the automobile among the general public is steps by the authorities to resurface many of the existing roads in Turkey and construct new ones. There are indications that very shortly some steps in this direction will be taken, and it

# Automobile

ITALIAN firm builds business by installing own garage and service depots. Light trucks needed. Balloon tires are favored.

is then that a great impetus will be given to the trade in automobiles.

There has lately been founded in Constantinople a Touring Club. This at present is working on modest lines, but will doubtless make its presence felt later, especially when it has linked up with similar organizations in foreign countries.

If foreign manufacturers are anxious to find an outlet in Turkey for part of their output it is absolutely necessary that they have their own garage with a complete plant for repairs, and that they keep a good many models on view and hold a large stock of spare parts. Above all, they should be represented by a good technical man who, beyond his capacity on the technical side, is also a first-class business getter.

As a matter of preference, the Turk will buy a make of automobile which is already in use in the country because in case of an accident he thinks that repairs are likely then to be more easily and rapidly carried out.

The foreign manufacturer must also be prepared to spend money on publicity, advertising in the local papers and the use of showcards, posters, etc. The best advertisement, however, consists in being able to show automobiles in service.

The number of automobiles in use in Turkey today is around 2000, while there are something like 300 trucks used, mainly in the interior of the country.

### Powerful Motors Essential

Owing to the poor state of the roads and the frequent and steep gradients, all vehicles should be powerfully engined. Fifteen to twenty horsepower motors are the most useful. The weight of the whole vehicle should not be more than 1½ to 2 tons. On the other hand, lower-powered automobiles can be sold for use in Constantinople, from 7 to 10 hp. appearing to be quite satisfactory there.

For town use the ordinary type of chassis is quite suitable, but for use in the country the colonial type is more serviceable, and the vehicle should be well sprung, as roads often become little more than tracks.

The Turk is a great believer in comfort, and for this reason balloon tires should always be fitted. As regards the body, the coupé or limousine is preferred in the city. So far none of the interchangeable types of body has made its appearance on the market. The torpedo body is very popular, and it almost seems that, because of its light weight, it is at present the only practicable one for service outside the towns.

As usual there are no complete statistics available regarding the import of automobiles. However, the number can be approximately estimated at the following figures for 1924. From 200 to 250 automobiles and from 125 to 150 trucks. Of these totals, France supplied about one-quarter.

*The old mode of transportation and the new*

The import tariff applied to Constantinople by the Angora Government since Oct. 18, 1923, charges all automobiles with a duty of 675 Turkish piastres multiplied by a coefficient of 5. This, therefore, works out at 3,375 piastres the kilo.

Vehicles for commercial purposes or for agricultural use can be imported duty free if the consent of the authorities has previously been obtained.

## Paris Buys 50,000 New Cars a Year

IN four years—from 1921 to 1924 inclusive—209,605 new automobile registrations have been shown for Paris and the immediate neighborhood comprising the Seine department, which has an area of 183 square miles, and during the same period 121,354 new driving licenses have been issued.

In France an automobile registration is good for the duration of the car and a driving license, once obtained, may last a lifetime, unless revoked for some grave fault. The above figures, therefore, show new cars put into service and new motorists.

Compared with 1913, the number of new driving licenses issued by the Paris authorities increased last year 292 per cent, and the number of new cars put into service increased 428 per cent.

These official figures show that in Paris only, the average increase during the last four years in the number of automobile drivers is 30,338, and the average increase in cars is 52,401. For the car figures a certain deduction must be made for replacements, but the driver figures are net.

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WITH a view to combining the strength and elasticity of steel with the good bearing qualities of other metals, Panhard & Levassor (according to a recent French patent) cut piston rings from steel tubes which have a steel core covered by a bronze jacket. It is suggested to cover the steel tube by melting a bronze wire by a blow pipe, welding it to the steel tube, with which it will make a very firm joint. The tube being carefully bored out on the inside and turned off on the outside, it is only necessary to part off the rings and split them to complete the job.

# Exports of Cars, Trucks, Tires and Parts for

| COUNTRIES | GASOLINE PASSENGER CARS | | | | | | | | | | TRUCKS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Up to $500 | | $500 to $800 | | $800 to $1200 | | $1200 to $2000 | | Over $2000 | | Up to 1 ton incl. | | 1 to 2½ tons | | Over 2½ tons | |
| | No. | Value | No. | Value | No. | Value | No. | Value | No. | Value | No. | Value | No. | Value | No. | Value |
| Austria | | | 4 | $3,046 | 2 | $2,313 | 1 | $1,460 | 2 | $5,399 | | | | | | |
| Azores and Madeira Islands | 10 | $4,492 | 5 | 3,629 | 1 | 1,021 | 2 | 3,346 | | | 1 | $526 | | | | |
| Belgium | 1 | 477 | 21 | 15,110 | 78 | 85,801 | 10 | 15,187 | 10 | 28,323 | 2 | 1,914 | 2 | $2,341 | | |
| Bulgaria | | | | | | | | | | | | | | | | |
| Czechoslovakia | | | | | 3 | 3,145 | | | | | | | | | | |
| Denmark | 576 | 274,752 | 20 | 15,204 | 69 | 67,990 | 14 | 19,751 | | | | | 7 | 9,132 | | |
| Esthonia | | | | | | | | | | | | | | | | |
| Finland | 15 | 7,383 | 26 | 19,581 | 26 | 25,705 | 8 | 11,204 | | | | | 9 | 11,197 | | |
| France | | | 1 | 846 | 10 | 10,764 | 21 | 30,353 | 10 | 29,260 | | | | | | |
| Germany | 2 | 870 | 36 | 25,542 | 85 | 95,845 | 54 | 88,569 | 65 | 165,281 | 10 | 4,999 | 1 | 975 | | |
| Gibraltar | | | 1 | 858 | | | | | | | | | | | | |
| Greece | 35 | 17,509 | 58 | 38,665 | 12 | 12,217 | 6 | 8,437 | 1 | 2,101 | 3 | 2,496 | | | | |
| Hungary | | | | | 1 | 1,109 | | | | | | | | | | |
| Iceland and Faroe Islands | | | | | | | | | | | | | | | | |
| Italy | | | | | | | 3 | 5,138 | | | | | | | | |
| Latvia | | | | | 2 | 1,981 | 1 | 1,470 | | | | | | | | |
| Malta, Gozo and Cyprus Islands | 6 | 1,752 | 1 | 620 | 1 | 1,273 | | | | | | | | | | |
| Netherlands | | | 17 | 12,019 | 60 | 65,616 | 63 | 101,188 | 11 | 33,287 | | | 2 | 3,638 | 1 | $2,240 |
| Norway | 5 | 2,345 | 7 | 5,270 | 17 | 17,950 | 4 | 5,488 | | | 4 | 4,728 | 11 | 11,969 | | |
| Poland and Danzig | | | 8 | 6,597 | | | | | | | 1 | 992 | | | | |
| Portugal | 31 | 15,068 | | | 22 | 23,420 | 12 | 17,362 | | | | | 1 | 1,364 | | |
| Rumania | | | | | 7 | 7,927 | 2 | 2,908 | 2 | 5,204 | | | | | | |
| Russia | | | | | | | | | | | | | | | | |
| Spain | 85 | 24,754 | 20 | 12,970 | 54 | 59,449 | 23 | 35,244 | 1 | 3,688 | 60 | 14,392 | 6 | 7,053 | | |
| Sweden | 11 | 5,130 | 65 | 49,838 | 45 | 45,929 | 9 | 12,578 | 7 | 18,500 | 26 | 26,837 | | | | |
| Switzerland | 8 | 4,984 | 33 | 24,528 | 114 | 125,276 | 13 | 17,893 | 16 | 46,241 | | | | | | |
| Turkey | | | 2 | 1,788 | 1 | 979 | 2 | 3,033 | | | | | | | | |
| Ukraine | | | | | | | | | | | | | | | | |
| England | 54 | 25,781 | 929 | 664,165 | 460 | 503,178 | 330 | 485,964 | 25 | 63,639 | 89 | 62,829 | 30 | 32,332 | 3 | 5,200 |
| Scotland | | | | | | | | | | | | | | | | |
| Ireland | | | | | | | | | | | | | | | | |
| Yugoslavia, etc. | | | | | 6 | 5,778 | 2 | 2,744 | | | | | | | | |
| United States | | | | | | | | | | | | | | | | |
| British Honduras | | | 1 | 579 | | | | | | | 2 | 906 | | | | |
| Canada | 34 | 10,354 | 151 | 104,667 | 169 | 165,170 | 54 | 79,827 | 22 | 57,895 | 25 | 18,500 | 51 | 78,167 | 12 | 29,432 |
| Costa Rica | 6 | 2,160 | 5 | 3,789 | 3 | 3,193 | | | | | 6 | 3,117 | 1 | 2,366 | | |
| Guatemala | | | 3 | 2,240 | 10 | 10,667 | 6 | 9,023 | | | 2 | 907 | | | | |
| Honduras | 3 | 900 | | | | | | | | | 4 | 1,168 | 2 | 2,093 | | |
| Nicaragua | | | | | 3 | 3,218 | 2 | 3,000 | | | | | | | | |
| Panama | 15 | 6,562 | 8 | 6,011 | 17 | 17,637 | 8 | 12,389 | | | 19 | 7,066 | 4 | 5,103 | | |
| Salvador | | | | | 9 | 8,977 | 11 | 15,259 | | | | | 2 | 2,637 | | |
| Mexico | 628 | 205,704 | 120 | 90,023 | 166 | 167,938 | 71 | 101,354 | 16 | 57,554 | 250 | 108,172 | 27 | 43,999 | 1 | 1,200 |
| Newfoundland and Labrador | | | | | 2 | 2,310 | | | | | 1 | 99 | 4 | 4,128 | | |
| Barbados | | | 1 | 615 | 4 | 4,732 | 1 | 1,388 | | | | | | | 2 | 4,386 |
| Jamaica | 9 | 3,188 | 2 | 1,498 | 5 | 5,248 | 2 | 2,972 | 1 | 3,500 | 5 | 1,760 | | | | |
| Trinidad and Tobago | 5 | 2,465 | 1 | 895 | 1 | 852 | 2 | 3,026 | | | | | | | | |
| Other British West Indies | 4 | 1,150 | 2 | 1,200 | 3 | 3,200 | 2 | 3,265 | | | 1 | 435 | | | | |
| Cuba | 459 | 141,681 | 138 | 97,794 | 65 | 63,754 | 21 | 31,693 | 34 | 102,399 | 182 | 47,435 | 15 | 19,759 | 3 | 11,065 |
| Dominican Republic | 52 | 18,552 | 4 | 2,650 | 10 | 10,563 | 4 | 5,923 | 2 | 5,204 | 6 | 2,208 | | | 7 | 22,319 |
| Dutch West Indies | | | 3 | 2,266 | 1 | 1,000 | | | | | | | | | | |
| French West Indies | 1 | 360 | | | 1 | 1,008 | | | | | 2 | 808 | | | | |
| Haiti | 4 | 1,907 | 4 | 2,958 | 6 | 5,782 | 3 | 4,329 | | | 1 | 776 | 6 | 8,210 | 1 | 1,390 |
| Virgin Islands | | | 1 | 825 | | | | | | | 1 | 275 | | | | |
| Argentina | 638 | $ 290,360 | [540 | 419,088 | 364 | 386,928 | 57 | 84,278 | 27 | 73,888 | 9 | 8,667 | 13 | 16,495 | 6 | 21,163 |
| Bolivia | | | 5 | 3,561 | 2 | 2,155 | | | 1 | 2,500 | | | | | | |
| Brazil | 368 | 105,691 | 157 | 123,859 | 131 | 127,789 | 27 | 39,671 | 13 | 41,138 | 200 | 61,530 | 7 | 8,038 | | |
| Chile | 19 | 8,360 | 17 | 12,866 | 17 | 17,308 | 4 | 5,993 | 7 | 20,183 | 18 | 10,189 | 13 | 18,708 | 7 | 18,635 |
| Colombia | 13 | 4,806 | 17 | 12,765 | 19 | 19,421 | 24 | 35,504 | 17 | 3,460 | 34 | 12,351 | 15 | 16,867 | 1 | 882 |
| Ecuador | | | 4 | 2,452 | 4 | 3,300 | 3 | 4,288 | | | | | | | | |
| British Guiana | 1 | 380 | | | | | | | | | | | | | | |
| Dutch Guiana | | | | | | | | | | | | | | | | |
| French Guiana | | | | | | | | | | | 1 | 675 | | | | |
| Paraguay | | | | | | | | | | | | | | | | |
| Peru | 66 | 24,685 | 10 | 7,716 | 37 | 40,067 | 15 | 21,832 | 7 | 20,725 | 118 | 50,782 | 48 | 69,147 | 8 | 17,488 |
| Uruguay | 187 | 47,666 | 28 | 20,776 | 25 | 27,368 | 9 | 13,315 | 6 | 13,473 | 136 | 39,222 | 4 | 4,666 | 2 | 5,481 |
| Venezuela | 43 | 15,428 | 8 | 5,863 | 27 | 27,841 | 5 | 7,562 | | | 47 | 19,629 | | | 2 | 11,010 |
| Aden | | | | | 1 | 810 | | | 3 | 7,938 | 2 | 993 | 1 | 1,977 | | |
| British India | 18 | 8,453 | 52 | 41,786 | 32 | 33,502 | 8 | 11,582 | | | 24 | 15,851 | | | | |
| Ceylon | | | | | 12 | 12,084 | | | | | 10 | 9,700 | 11 | 13,359 | 4 | 5,874 |
| Straits Settlements | 1 | 456 | 14 | 11,490 | 20 | 20,456 | 3 | 4,366 | 1 | 2,800 | 1 | 1,006 | 3 | 4,800 | | |
| Other British East Indies | | | | | | | | | | | | | | | | |
| China | 1 | 450 | 28 | 18,586 | 14 | 17,076 | 6 | 9,123 | 1 | 2,025 | 1 | 992 | 1 | 2,660 | | |
| Chosen | | | | | | | | | | | | | | | | |
| Java and Madura | 9 | 4,776 | 15 | 10,271 | 53 | 55,606 | 4 | 6,437 | | | | | | | | |
| Other Dutch East Indies | | | 14 | 8,496 | 7 | 7,463 | | | | | | | 4 | 3,577 | | |
| French Indo China | | | | | 4 | 3,840 | | | | | | | | | | |
| Hejaz, Arabia, etc. | 42 | 14,712 | | | | | | | | | | | | | | |
| Hongkong | 5 | 1,800 | 2 | 1,656 | 4 | 3,709 | 1 | 1,392 | 1 | 3,000 | 17 | 6,655 | | | | |
| Japan | 6 | 1,900 | 1 | 600 | 13 | 14,269 | 13 | 18,224 | 3 | 8,936 | | | 1 | 1,820 | | |
| Kwantung | | | 1 | 713 | | | | | | | | | | | | |
| Palestine and Syria | 60 | 19,447 | 16 | 11,351 | 10 | 10,830 | 14 | 20,255 | | | | | | | | |
| Persia | 22 | 7,920 | | | | | | | | | | | | | | |
| Philippine Islands | 76 | 28,788 | 32 | 26,822 | 84 | 90,871 | 47 | 68,450 | | | 55 | 18,625 | 16 | 33,666 | | |
| Russia | | | | | | | | | | | | | | | | |
| Siam | | | | | | | | | | | | | 1 | 982 | | |
| Australia | 1,341 | 509,504 | 1,274 | 870,111 | 719 | 771,719 | 139 | 205,028 | 22 | 54,555 | 120 | 85,683 | 50 | 71,465 | 33 | 87,169 |
| New Zealand | 148 | 70,744 | 104 | 69,692 | 138 | 147,157 | 30 | 44,965 | 4 | 9,376 | 28 | 28,514 | 20 | 26,168 | | |
| British Oceania | | | | | | | | | | | | | | | | |
| French Oceania | | | | | | | | | | | | | | | | |
| Other Oceania | | | | | | | | | | | | | | | | |
| Belgian Congo | | | | | | | | | | | 50 | 17,600 | | | | |
| British West Africa | | | 3 | 2,430 | 5 | 5,550 | 2 | 3,093 | | | 12 | 11,875 | 21 | 21,960 | | |
| British South Africa | 84 | 39,842 | 130 | 98,101 | 340 | 363,684 | 25 | 35,895 | 1 | 2,107 | 24 | 15,477 | 8 | 10,568 | | |
| British East Africa | 34 | 14,950 | 2 | 1,546 | 30 | 33,386 | | | | | | | | | 1 | 1,946 |
| Canary Islands | | | 3 | 2,383 | 7 | 8,179 | | | 1 | 3,337 | | | | | | |
| Egypt | 4 | 2,163 | 5 | 3,442 | 9 | 9,493 | 1 | 1,469 | | | 1 | 400 | | | | |
| Algeria and Tunis | | | | | | | | | | | | | | | | |
| Other French Africa | 2 | 512 | | | | | 2 | 2,843 | | | 12 | 4,752 | | | | |
| Liberia | | | | | | | 1 | 1,437 | | | 1 | 330 | | | | |
| Morocco | 66 | 22,328 | 5 | 2,870 | 4 | 4,059 | 3 | 4,116 | 1 | 2,116 | 16 | 6,464 | | | | |
| Portuguese East Africa | 6 | 2,160 | 9 | 7,299 | 8 | 9,290 | | | | | | | | | | |
| Other Portuguese Africa | | | | | | | | | | | | | | | | |
| Total | 5,319 | $2,028,561 | 4,194 | $3,016,877 | 3,691 | $3,915,125 | 1,210 | $1,793,883 | 325 | $899,032 | 1,640 | $741,307 | 418 | $573,386 | 94 | $246,880 |

# February, 1925 | Canadian Exports

| ELECTRIC VEHICLES | | PARTS | TIRES | | | | | | PASSENGER CARS | | | | | | TRUCKS | | PARTS | COUNTRIES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Casings | | Inners | | Solids | | Up to $500 | | $500 to $1000 | | Over $1000 | | | | | |
| No. | Value | Value | No. | Value | No. | Value | No. | Value | No. | Value | No. | Value | No. | Value | No. | Value | Value | |
| | | $265 | | | | | | | | | 3 | $2,947 | 1 | $1,333 | | | | Austria |
| | | 392 | 66 | $878 | 30 | $48 | | | | | | | | | | | | Azores and Madeira Islands |
| 1 | $2,055 | 199,953 | 3,482 | 57,544 | 3,627 | 12,590 | | | | | 3 | 2,278 | | | | | $13,699 | Belgium |
| | | 252 | | | | | | | | | | | | | | | | Bulgaria |
| | | 651 | 1,092 | 21,055 | 1,032 | 2,907 | 169 | $5,067 | | | | | | | | | | Czechoslovakia |
| | | 138,330 | 1,569 | 14,610 | 425 | 842 | 50 | 1,802 | 40 | $15,262 | | | | | | | 264 | Denmark |
| | | 59 | | | | | | | | | | | | | | | | Esthonia |
| | | 704 | 341 | 5,293 | 220 | 240 | | | 21 | 8,676 | | | | | | | | Finland |
| | | 253,862 | 925 | 19,700 | 519 | 1,385 | 36 | 1,798 | | | | | | | | | | France |
| | | 90,847 | 281 | 9,322 | 206 | 712 | | | | | | | | | | | 600 | Germany |
| | | 280 | | | | | | | | | | | | | | | | Gibraltar |
| | | 7,300 | 840 | 13,381 | 673 | 1,340 | 64 | 3,333 | 21 | 8,536 | | | 1 | 1,229 | | | 1,100 | Greece |
| | | | 37 | 711 | 221 | 386 | | | | | | | | | | | | Hungary |
| | | | 195 | 2,744 | 88 | 103 | | | | | | | | | | | | Iceland and Faroe Islands |
| | | 16,820 | 182 | 2,882 | 272 | 391 | | | | | | | | | | | | Italy |
| | | | 95 | 1,311 | 35 | 92 | | | | | | | | | | | | Latvia |
| | | 346 | | | | | | | 3 | 1,239 | | | | | | | 104 | Malta, Gozo and Cyprus Islands |
| | | 110,743 | 1,335 | 20,205 | 604 | 1,346 | 26 | 778 | | | 2 | 1,955 | | | | | 60 | Netherlands |
| | | 8,515 | 1,276 | 21,663 | 1,647 | 2,408 | 45 | 2,053 | | | | | | | | | | Norway |
| | | 4,172 | 830 | 9,760 | 1,282 | 2,203 | | | | | | | | | | | | Poland and Danzig |
| | | 6,051 | 303 | 4,416 | 2,076 | 3,720 | 2 | 35 | | | | | | | | | | Portugal |
| | | 972 | | | 102 | 258 | | | | | | | | | | | 2,032 | Rumania |
| | | | | | | | | | | | | | | | | | | Russia |
| | | 34,045 | 1,449 | 18,541 | 1,049 | 1,869 | 221 | 4,054 | | | | | | | | | | Spain |
| 1 | 2,360 | 44,862 | 2,483 | 29,261 | 1,124 | 5,683 | 2 | 130 | | | 4 | 3,242 | 10 | 12,940 | | | 46 | Sweden |
| | | 1,749 | 287 | 5,738 | 308 | 761 | | | | | | | | | | | 33 | Switzerland |
| | | 1,917 | 20 | 313 | 46 | 98 | | | | | | | | | | | | Turkey |
| | | | | | | | | | | | | | | | | | | Ukraine |
| | | 293,627 | 10,983 | 127,271 | 3,493 | 15,250 | 2,556 | 52,443 | | | 13 | 8,200 | 8 | 10,170 | 153 | 50,604 | 11,363 | England |
| | | | | | | | | | | | | | | | | | | Scotland |
| | | 11,127 | 148 | 1,325 | 40 | 58 | | | | | | | | | | | 20,604 | Ireland |
| | | 131 | 83 | 978 | 78 | 123 | 2 | 62 | 4 | 1,626 | | | 3 | 3,895 | | | | Yugoslavia, etc. |
| | | | | | | | | | 2 | 250 | 1 | 1,000 | 2 | 2,800 | | | 16,535 | United States |
| | | 1,475 | 18 | 238 | 22 | 29 | | | | | | | | | | | | British Honduras |
| 1 | 3,977 | 1,460,281 | 2,705 | 25,140 | 1,982 | 6,985 | 217 | 5,792 | | | | | | | | | | Canada |
| | | 3,070 | 45 | 1,501 | 31 | 132 | | | 1 | 407 | | | | | | | | Costa Rica |
| | | 2,806 | 144 | 2,407 | 81 | 186 | | | | | | | | | | | | Guatemala |
| | | 1,844 | 28 | 353 | 133 | 219 | ▲ 39 | 2,390 | | | | | | | | | | Honduras |
| | | 96 | 83 | 961 | 19 | 26 | 2 | ▶ 62 | | | | | | | | | | Nicaragua |
| | | 11,158 | 746 | 11,948 | 908 | 1,656 | ▮ 82 | 2,026 | | | | | | | | | | Panama |
| | | 4,502 | 273 | 4,828 | 247 | 572 | ▮ 28 | 1,036 | | | | | | | | | 16 | Salvador |
| 1 | 2,228 | 92,893 | 4,035 | 52,180 | 4,188 | 7,412 | [131 | 3,139 | | | | | | | | | | Mexico |
| | | 1,190 | 2 | 30 | | | | | | | | | | | | | 26 | Newfoundland and Labrador |
| | | 2,314 | 20 | 248 | ▶ 8 | 15 | 16 | ▶ 264 | | | 1 | 961 | 1 | 1,342 | 4 | 1,288 | 293 | Barbados |
| | | 10,127 | ▮ 365 | 2,883 | 194 | 233 | [ 77 | 2,471 | | | 1 | 744 | 1 | 1,113 | | | 211 | Jamaica |
| | | 3,575 | 54 | 621 | [ 12 | 42 | [ 27 | 1,080 | 16 | 4,874 | 1 | 981 | | | 15 | 4,830 | | Trinidad and Tobago |
| | | 2,509 | 174 | 946 | [ 5 | 11 | | | 4 | 1,582 | ▮ 1 | ▮ 850 | 1 | 1,119 | | | 16 | Other British West Indies |
| | | 85,982 | 5,097 | 50,974 | 13,198 | 18,616 | 832 | 19,268 | | | 3 | 2,542 | 3 | 3,831 | | | | Cuba |
| | | 7,206 | 1,133 | 12,397 | 697 | 1,087 | 217 | 6,210 | | | | | | | | | | Dominican Republic |
| | | 1,415 | 195 | 2,045 | 297 | 422 | | | | | | | | | | | | Dutch West Indies |
| | | 1,485 | 165 | 2,549 | [156 | 352 | | | | | | | | | | | | French West Indies |
| | | 5,503 | 161 | 2,195 | 400 | 721 | | | 5 | 2,015 | | | | | | | | Haiti |
| | | 1,547 | 4 | 47 | ▮ 42 | 57 | | | | | | | | | | | | Virgin Islands |
| | | 246,783 | [ 454 | 167,290 | 22,032 | 30,253 | [282 | 8,901 | 164 | 66,092 | ▮ 74 | 62,635 | 49 | 60,670 | | | 22,021 | Argentina |
| | | 380 | ▶ 75 | 837 | [105 | 193 | | | 2 | ▮ 830 | | | [ 8 | 10,256 | | | | Bolivia |
| | | 306,874 | 5,259 | 51,434 | 3,230 | 4,154 | 47 | [1,197 | 162 | 66,421 | ▮ 53 | 45,864 | [ 33 | 40,443 | | | 52,668 | Brazil |
| | | 38,962 | [ 548 | 24,444 | 531 | 1,315 | | | 2 | 422 | ▮ 1 | 862 | ▮ 6 | 7,167 | | | 6 | Chile |
| | | 16,433 | 942 | 12,168 | 1,546 | 2,923 | 74 | 3,725 | 1 | [ 434 | | | | | | | | Colombia |
| | | 2,425 | ▮ 204 | 3,473 | 760 | 1,435 | | | | | | | | | | | | Ecuador |
| | | ▮ 868 | ▶ 11 | 112 | | | | | 12 | 4,068 | | | | | 2 | 644 | | British Guiana |
| | | 313 | 34 | 349 | 80 | 99 | | | | | | | | | | | | Dutch Guiana |
| | | 1,225 | [37 | 1,816 | 21 | ▮ 106 | | | | | | | | | | | | French Guiana |
| | | 1,053 | | | | | | | | | | | | | | | | Paraguay |
| 17,488 | | 48,531 | 1,372 | 21,944 | 1,128 | [3,064 | 31 | [1,102 | 12 | 4,874 | 8 | 6,917 | 9 | 11,296 | 4 | 1,384 | | Peru |
| 5,481 | | 16,493 | 7,325 | 37,066 | 1,473 | 1,802 | 24 | ▬ 916 | 70 | 29,108 | 18 | 14,951 | 9 | 10,886 | | | | Uruguay |
| 11,010 | | 19,231 | 2,302 | 24,266 | 2,596 | [5,118 | | | 17 | 6,919 | | | | | | 20 | | Venezuela |
| | | | [135 | 1,130 | 120 | ▮ 160 | | | | | | | | | 5 | 1,695 | | Aden |
| | | 23,603 | 1,685 | 17,479 | [627 | 894 | [135 | [2,312 | 475 | 158,193 | ▮ 46 | 34,492 | 9 | 11,718 | 85 | 29,137 | 22,804 | British India |
| 5,874 | | 5,361 | 204 | 2,393 | ▶ 37 | ▶ 161 | ▶ 30 | [1,023 | 34 | 11,384 | ▮ 8 | 7,007 | | | 24 | 8,408 | 9,330 | Ceylon |
| | | 28,151 | 4,907 | 40,772 | 2,272 | 3,174 | 228 | [5,445 | 173 | 56,042 | ▮ 50 | 31,357 | 8 | 6,028 | 47 | 15,190 | 20,296 | Straits Settlements |
| | | | | | | | | | | | | | | | | | | Other British East Indies |
| | | 7,289 | 156 | 2,227 | 82 | 108 | | | 2 | 806 | 5 | 4,409 | 8 | 9,721 | 1 | 346 | | China |
| | | 2,258 | | | | | | | | | | | | | | | | Chosen |
| | | 22,403 | ▲ 2,644 | 20,968 | 86 | 255 | [186 | 4,568 | 135 | 45,057 | 7 | 5,813 | 6 | 7,040 | 29 | 10,273 | 65 | Java and Madura |
| | | 4,299 | | | | | | | | | | | | | | | | Other Dutch East Indies |
| | | 312 | | | | | | | | | | | | | | | | French Indo China |
| | | 766 | ▮ 240 | 1,760 | 250 | 280 | ▮ 10 | 120 | 4 | 1,674 | 3 | 2,579 | 3 | 3,390 | | | | Hejaz, Arabia, etc. |
| | | 3,029 | | | | | | | | | | | | | | | | Hongkong |
| | | 41,910 | 2,196 | 17,382 | [804 | 1,103 | [237 | 3,658 | 6 | 2,415 | 38 | 29,432 | 4 | 4,426 | | | 28 | Japan |
| | | 121 | | | | | | | | | | | | | | | | Kwantung |
| | | 6,982 | 436 | 6,226 | 555 | ▮ 950 | | | 4 | 1,643 | | | | | | | | Palestine and Syria |
| | | 256 | ▶ 6 | 78 | 6 | 13 | | | | | | | | | | | | Persia |
| | | 22,294 | 4,098 | 42,192 | 1,756 | 2,989 | 455 | 13,258 | | | | | | | | | | Philippine Islands |
| | | 103 | | | | | | | | | | | | | | | | Russia |
| | | 1,270 | | | | | | | 23 | 6,969 | | | | | 18 | 5,820 | 2,362 | Siam |
| 87,160 | | 215,720 | 5,013 | 81,605 | 1,517 | 3,710 | 780 | 21,598 | 636 | 179,586 | | | 8 | 9,177 | 348 | 115,968 | 25,485 | Australia |
| | | 39,496 | 2,166 | 38,177 | 2,467 | 5,413 | 440 | 15,769 | 842 | 301,290 | 259 | 207,096 | 13 | 15,065 | 309 | 114,463 | 57,477 | New Zealand |
| | | 895 | 18 | 171 | 9 | 13 | | | 1 | 282 | | | | | | | 120 | British Oceania |
| | | 805 | 31 | 362 | 56 | 106 | 2 | 39 | | | | | | | | | | French Oceania |
| | | 774 | 23 | 328 | 21 | 34 | 2 | 44 | 8 | 2,304 | | | | | | | 965 | Other Oceania |
| | | 468 | 25 | 619 | 35 | 116 | | | | | | | | | | | | Belgian Congo |
| | | 7,657 | 139 | 2,215 | 186 | 330 | | | 54 | 16,277 | | | | | 24 | 8,188 | 2,540 | British West Africa |
| | | 73,582 | 1,545 | 16,345 | 888 | 6,162 | 70 | 1,425 | 129 | 50,959 | | | | | 6 | 1,932 | 169,567 | British South Africa |
| | | 12,715 | 469 | 8,209 | 808 | 1,816 | 6 | 113 | 27 | 9,078 | | | | | 54 | 19,532 | 1,467 | British East Africa |
| 1,946 | | 4,877 | 198 | 3,033 | 50 | 157 | 66 | 2,728 | 3 | 1,218 | | | | | | | | Canary Islands |
| | | 10,931 | 473 | 5,109 | 266 | 517 | 46 | 569 | 8 | 3,440 | 1 | 948 | | | | | | Egypt |
| | | 162 | | | | | | | | | | | | | | | | Algeria and Tunis |
| | | 848 | | | | | | | | | | | | | | | | Other French Africa |
| | | 15 | | | | | | | | | | | | | | | | Liberia |
| | | 9,552 | | | | | | | 3 | 1,300 | | | | | | | | Morocco |
| | | 5,038 | 90 | 1,439 | 70 | 272 | | | 6 | 2,382 | 5 | 2,645 | | | | | | Portuguese East Africa |
| | | 127 | | | | | | | | | | | | | | | | Other Portuguese Africa |
| 4 | $10,620 | $4,182,620 | 105,209 | $1,218,811 | 88,287 | $172,781 | 7,992 | $203,806 | 3,132 | $1,075,934 | 675 | $520,562 | 201 | $247,055 | 1,128 | $389,702 | $455,750 | Total |

# *Here and There in Foreign Markets*

*By special arrangement with the Automotive Division, Bureau of Foreign and Domestic Commerce*

### The Tire Market in China

SALES of tires in China, as of many other import lines, were noticeably affected by the civil disturbances the latter part of 1924. Future sales during 1925 are more or less contingent on the maintenance of stable business operating conditions. Prices have remained practically unchanged, although larger discounts are known to have been granted than the 45 per cent agreed upon between Dunlop and the leading American companies. Indications point to a breaking down of this agreement and a resumption of the price cutting campaign. More aggressive selling campaigns on the part of two representatives of leading American tires is in evidence, the outcome of which may tend toward a more equable distribution of tire sales in this district than has hitherto prevailed. Balloon tires were introduced into the local market during 1924 and, while sales have been limited, the tires are reported as being favorably received.

### Filling Stations in Germany

WITH the increase of automotive traffic in Frankfort-on-Main, local gasoline companies have been making strenuous efforts to secure permission from the city to erect suitable gasoline filling stations along the public streets. Thus far, permission has been refused, for the city authorities favor the suggestion of their municipal engineers that such filling stations, if established at all, should be erected and operated by the city only. However, the city's project has aroused much local opposition, since it is claimed that it would be detrimental to retail dealers and garages and likely to prove an expensive and unprofitable enterprise for municipal funds. While it is not yet certain that the city will erect such gasoline filling stations, American exporters of these commodities might anticipate sales by providing the "Magistrat der Stadt Frankfurt," of Frankfort-on-Main, Germany, with suitable illustrated literature in the German language.

### Selling Tires in India

IT is estimated that at present there are approximately 50,000 automobiles in India, in both British provinces and Native States as well as Burma. They are most numerous in the larger cities, particularly in Bombay and Calcutta. The greatest possible competition exists in the tire market, and tires are handled on the smallest of margins because of competition between the manufacturers represented, as well as competition between dealers handling tires. The greatest number of automobile tires is sold through the bazars where numerous small shopkeepers adjoining one another will handle the same makes of tires and will retail them at whatever price they can obtain actually above cost.

### American Accessories in Spain

ONE of the leading importers and retailers of automobile accessories in Spain reports a great interest in American motometers, radiator cement, windshield cleaners and electric spot lights, all of which this company declares are better products than those made by any other competing countries. The customs authorities have ruled that automobile shipments including one or more spare tires should be declared as an "automobile with five wheels." Otherwise a fine will be imposed and the extra tire or tires will be assessed under the general schedule of the tariff schedule.

### Russia's Decrepit Equipment

A PROMINENT Russian, in the Moscow publication *Economic Life*, states that of the total 15,026 automotive vehicles in Soviet Russia, including motor trucks, automobiles and motorcycles, only 9783 are in operation. He goes on to say that from 90 to 95 per cent of the 9783 are between eight and ten years old and on account of their worn-out condition are little suited for commercial operation. The cost of overhauling these machines is extraordinarily high, being estimated at 40 to 45 per cent of the initial cost of a new machine.

### China Favors Light Car

IMPORTS of automobiles into Shanghai during the last quarter of 1924 plainly indicated the growing preference for the light car, according to information from Assistant Trade Commissioner James H. Smiley. European makes have enjoyed a fairly good business and it is felt that the European car will give considerable competition during the coming year, principally on account of its low operating cost. Imports of passenger cars into Shanghai last year totaled 1205. Of this number the United States furnished 668.

### Berlin Automobile Show Date

THE 1925 Berlin automobile show has been set for Nov. 26 to Dec. 6. The show will again be held in the two large exhibition buildings on the Kaiserdamm.

# EDITORIAL

## 1925—Banner Export Year

NINETEEN TWENTY-FIVE is bearing out all the predictions made for it as an automotive export year. Up to the present, according to the best estimates available, the sales of American cars and trucks to foreign countries have been about 12 per cent above the 1924 average, and 1924, with a 15 per cent increase over 1923, set a new mark in overseas business. If the present rate of gain is maintained during the balance of the year the total number of American designed units sold abroad will be in the neighborhood of 430,000, as compared with slightly less than 380,000 in 1924.

Under the heading, "1925 begins auspiciously in automotive foreign markets," the U. S. Bureau of Foreign and Domestic Commerce recently published an extremely optimistic report covering trade conditions in the foreign field. An unprecedented demand for American-made motor vehicles was found to exist in Argentina, Brazil, Denmark, Egypt, Greece, India, Poland, Porto Rico and Great Britain. Concerning the latter the report said: "The increased number of cars imported since the first of the year reflects the improved market for American, French and Italian makes. In January 969 complete passenger cars were imported from the United States, the largest number of American cars so far brought into Great Britain during any single month. France was second with 840 cars."

In Argentina American manufacturers are supplying 97 per cent of the cars sold and it is generally believed that 40,000 cars will be needed to meet this year's demand. American dealers in Brazil have many unfilled orders on their books, the demand having depleted their stocks. In Egypt the outlook is distinctly good because of the high prices realized this season for Egyptian cotton. Time-sales finance companies are stimulating the market in India. Sales of passenger cars in Poland are 100 per cent higher than last year and there is said to be a splendid market there for American trucks if credit arrangements can be offered.

## Crank Arm Designs

SOME time ago we commented on the influence of tradition upon design, as evidenced by the fact that the rear engine bearing is commonly made considerably longer than any other, although with the light flywheels used on multi-cylinder engines this is not required. There seems to be a similar influence in connection with the design of crankshaft arms. Originally engine crankshafts were made from solid slabs of steel, and it was the natural thing to make the width of the arms equal to the thickness of the slab, which in turn was determined by the diameter of the shoulders required at the bearings.

The early engines were mainly of the single cylinder type, in which, because of the short distance between supports, the bending moment on the crankshaft was of less importance as compared with the torsional moment. In multi-cylinder engines there are often several throws between supports, and the bending moments then are by far the most important factor in determining the proportions of the shaft. Now, it is obvious that a crank arm of relatively great width and small thickness offers not nearly as much resistance to bending forces as does an arm of more nearly square section and with the same amount of steel in it. The width of such an arm would be no greater than the diameter of the bearings, and flanges would therefore have to be forged on at both sides of each journal in order to provide the shoulders required. The provision of these flanges in the forging involves no difficulty and, in fact, on some engines such flanges are now provided on the main bearing on which the end thrust is taken. Of course, crankshafts of this design do not lend themselves to complete machining, but this practice is as yet comparatively rare and is not likely to ever come into use on truck and tractor engines.

## Ups and Downs

AUTOMOTIVE business is on the up grade today. Expert observers look for a continued upward trend until the end of May, with the usual falling off in production during the summer.

Other industries are not so fortunate. There can be little doubt that the post-election stimulation of business in general has worked itself out in many lines. The latest bulletin of the Harvard Economic Service verifies this conception with the statement, "It is clear, therefore, that the expansion of business has been checked, at least temporarily, and that a recession of activity, accompanied by a weakness in commodity markets, is under way." There has been a slight drop in commodity prices during the last week and continued drouth in some parts of the Southwest is causing concern among farmers.

By the time the automobile industry has run through its seasonal rise, the general business trend may again be on the rise so that automotive manufacturers may get through the entire year without any serious falling off in business. Barring such a turn of events, however, only fair sales are to be expected for the rest of the year, although this reasonably good business seems assured.

# Our Industry Today

## *Production Acceleration Continues—New Ford Plan Creates Widespread Comment—Parts Makers Reflect High Output Rate*

NEW YORK, April 22.—Fair weather and improvement in the used car situation have resulted in continued acceleration of production throughout the automobile industry during the past week. The high rate of car and truck production is reflected in sales reports of parts manufacturers. Figures just compiled by the Motor and Accessory Manufacturers' Association show that the value of original equipment sales for March was 38 per cent greater than for January. Increases in the sale of accessories were 59 per cent and of service equipment 62 per cent. Replacement parts held steady.

Announcement of the new Ford time payment plan, whereby it is possible to get a car for as low a down payment as $12.40 naturally has been the subject of widespread speculation and comment. It is generally agreed that the plan will stimulate sales and there is a feeling that open car demand particularly will be benefited. This latter assumption is based on the fact that the $12.40 down payment applies only on the open models without starting and lighting equipment, while much more substantial sums are required on the two and four-door sedans.

**Aviation Receives Attention**

Commercial aviation is getting more and more attention from automotive executives, special interest having been stimulated in the last few days by the definite backing being given by Henry Ford to the new form of transportation.

Despite prospects of total output approximating 400,000 for the month of April, there is little tendency on the part of executives to begin thinking in terms of production records. Even if that figure be reached this month, output for the first months of 1925 will be behind that of the similar period in 1924 by about 179,000. There is every indication, however, that the present acceleration in production and retail sales will continue through May.

Financial statements of some important companies for the first quarter as well as analysis of sales and production operations in general point to a year of better earnings than was experienced in 1924. These indications bear out earlier predictions that there would be no repetition this year of the production orgies of 1924 and that cautiousness would prevail in practically all automotive policies.

### FRENCH SALES LOW

WASHINGTON, April 23—The Automotive Division is informed that French domestic automobile sales are below the level of this time last year, with factories operating approximately 75 per cent of capacity. Total January and February exports of passenger cars number 8750, while trucks amounted to 795.

## Condemn Time Sales at Less Than 1/3 Cash

### National Association of Finance Companies Adopts Resolutions —Say Ford Not Affected

CHICAGO, April 22—Resolutions condemning motor retail time sales transactions where the minimum down payment is less than one-third the cash or 30 per cent of the time selling price, approving the requirement of endorsement or repurchase agreement by the dealer and opposing the giving or receiving of rebates were adopted by the board of directors of the National Association of Finance Companies at a recent meeting. The resolution affecting time payments is as follows:

Whereas, it is the opinion of the directors of the National Association of Finance Companies that resolutions A, B and C setting forth certain credit terms, adopted at a general meeting of finance companies at Chicago, Dec. 10-11, 1924, are fundamentally sound, and should be observed by finance companies and automobile dealers;

**Regular Payments Violated**

And whereas, a number of finance companies and automobile dealers, apparently with the knowledge of some of their respective bankers, have not been observing said resolutions in the recent conduct of their business, but have continued to accept motor retail time sales transaction covering the sales of new passenger cars where the minimum down payment has been less than 33⅓ per cent of the cash or 30 per cent of the time selling price, and in many cases where there have been more than twelve equal monthly payments, or where the twelfth monthly installment has been larger than the previous installments with an agreement, implied or otherwise, to renew such installments for a longer period.

And whereas this association cannot legally require compliance by its members with the aforesaid resolutions A, B and C.;

Now therefore, be it resolved: That the status of any member of this association is not affected by reason of its failure to conduct its business on the basis set forth in the aforesaid resolutions A, B and C, nor shall such action by such members be constructed as a repudiation of the soundness of the fundamental principles embodied in said resolutions;

Another resolution reads:

Whereas, the report of a special committee of this association reflects the majority opinion of representative finance companies throughout the United States that endorsement or repurchase agreement by the dealer should be required in connection with used car paper purchased by finance companies;

Now therefore, be it resolved: That the directors of the National Association of Finance Companies recommend that all finance companies and local associations support this practice, and put it into effect wherever practicable;

**Rebates Unfair**

A third resolution is as follows:

Whereas, the practice of some finance companies of giving automobile dealers rebates in one form or another is unfair competition, and a fraud upon the public, which may lead to generally discrediting the automobile time sales business;

Now therefore, be it resolved: By the board of directors of this association, that the practice of giving and receiving rebates be unreservedly condemned, and that finance companies and automobile dealers be urged to give retail buyers of automobiles the benefit of any economies that can be effected in financing time sales.

Explaining the resolution which calls for 33 1/3 per cent of the cash or 30 per cent of the time selling price, with the remainder to be paid in twelve equal monthly installments, Charles C. Hanch, secretary and general manager of the association, said that it was not adopted with any reference to the plan now being tried out in Detroit by Ford dealers.

## Willys Will Speak on U. S. Treaties

NEW YORK, April 22—"Our Commercial Treaties" is the topic of the address to be given by John N. Willys, president of the Willys-Overland Co., at the annual convention of the United States Chamber of Commerce in Washington in May.

Mr. Willys recently headed the delegation which supported the ratification of the German treaty and has appeared before officials of the Department of State, Traffic Commission, Department of Commerce and Foreign Relations Committee of the Senate. He is chairman of the Foreign Trade Committee of the National Automobile Chamber of Commerce. In view of these activities and Mr. Willys' position in the industrial world, business circles will attend with interest the policies which he will advocate at this gathering.

# New Parts Association Formed

## *Comprises 38 Major Stations and 393 Sub-Stations for Complete Stocks—G. W. Yeoman Elected President*

DETROIT, April 21—National Automotive Parts Association has been formed here for the promotion of better merchandising methods among members, closer cooperation with manufacturers whose products are handled, and improved service to the motoring public. The new organization is an outgrowth of the group of parts distributing stations established three years ago by leading unit parts manufacturers. George W. Yeoman, until recently vice-president of Continental Motors Corp., is president of the new organization. The membership comprises 38 major parts distributing stations and 393 sub-stations. The number of sub-stations represented in the association will be increased to 690, each setting up complete stocks of parts made by representative manufacturers in all districts of the country.

Other officers of the association are H. G. Root, Springfield, Ohio, vice-president, and L. B. Fijux, Detroit, secretary and treasurer. The directors are, in addition to the officers, C. C. Colyear, Los Angeles; W. W. Martin, Pittsburgh; A. F. Baxter, Buffalo; Estel Scott, Kansas City; R. W. Boozer, Indianapolis, and R. F. Stahl, Chicago.

Manufacturers for whom replacement parts are distributed by the new organization include: Continental Motors Corp., Brown-Lipe Gear Co., Timken Detroit Axle Co., Timken Roller Bearing Co., Borg & Beck Co., Spicer Manufacturing Corp., Oakes Co., Automotive Parts Co., Warner Gear Co., McQuay-Norris Manufacturing Co., Automotive Gear Works, Toledo Steel Products Co., Diamond State Fibre Co., John C. Hoff & Co., Hide Leather and Belting Co., Strohm Ball Bearing Manufacturing Co., Bunting Brass and Bronze Co., Farranoid Co., Pierce Governor Co., Monarch Governor Co., Laminated Shim Co., Hartford Automotive Parts Co., Morse Chain Co., Cincinnati Ball Crank Co., Fitzgerald Manufacturing Co., Indiana Piston Ring Co. and other companies manufacturing small items.

### New Lines Will Be Added

Under the plans of the association members will carry replacement parts for every service requirement, selecting one representative make for distribution. New lines of merchandise, all leaders in their respective fields, will be added to the present list of accounts within the immediate future, until the service line is completely rounded out.

Through its membership the association is equipped to provide the most thorough kind of distribution of replacement parts and other materials. Large stocks of all parts and material will be carried in the main stations, and complete stocks will be carried in all sub-stations. Eighty-seven salesmen are now traveling from the main stations, keeping in constant touch with the sub-stations and assuring that stock will be maintained in proper quantity and variety. Sub-stations now employ 1500 assistants, selling to parts specialists, dealers, fleet owners, garages, repairmen and owners.

The various distributing organizations now joined in the new association have operated heretofore through a committee appointed from parts station representatives and unit manufacturers whose products they handle. It is planned that representatives of manufacturers will confer and work closely with association directors, so that none of the advantages of the former method will be lost.

### Service Facilities Opened

It is believed that through association and the direction of able officers and directors more uniform policies can be maintained, and efficiency in merchandising and distribution be improved. Particularly advantageous service facilities are opened by the association to automobile manufacturers whose cars are equipped with units for which replacement parts are thus distributed, the organization announcement declares.

In a statement on the extent of potential business of the association, Mr. Yeoman said that the growth of business among companies now comprising the association has been pronounced during the past six months. The group volume of business in the present year will double that of any previous similar period, he said.

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## *ALL MOTOR ELEMENTS JOIN TAX CAMPAIGN*

**NEW YORK, April 22—All elements of the automobile industry will cooperate to make of the campaign for repeal of the war excise taxes, launched recently in Washington, the most vigorous and effective so far attempted.**

**The National Automobile Chamber of Commerce has enlisted the support of the National Automobile Dealers' Association, the American Automobile Association and several other influential organizations in a movement that will be carried to remote sections of the country, where individual members of Congress will be seen while at home, and impressed with the importance of repealing the taxes.**

**This personal appeal is based on the general understanding that the taxes will be eliminated if the Administration can be shown that the public at large is interested in the matter, rather than merely the members of the trade. It is regarded as a comparatively simple matter to demonstrate that the motor-owning public, representing probably a majority of the voters, is vitally concerned in the taxes.**

## Macauley Advocates Improving Streets

NEW YORK, April 21—"It must be admitted that we—the automobile industry—have been so concerned with 'next year's model' that we have forgotten that it would have to run on last generation's streets—and generally on streets built on the 1682 model—when William Penn laid out the first checkerboard street plan for Philadelphia," said Alvan Macauley, president of the Packard Motor Car Co., addressing the National Conference on City Planning in New York this week.

"We have been so busy boosting highways to take a man from one city to another that we have given no thought to what happens when he gets there. But now we must add to the slogan of 'Good Roads,' one of 'Better Streets.'

"With adequate funds and public support the city engineers of the larger cities could eliminate the most serious traffic difficulties—at least for some years."

Mr. Macauley is a director of the National Automobile Chamber of Commerce and a member of its Traffic Planning and Safety Committee.

## Allen Elected Head of Garford Truck

LIMA, OHIO, April 21—C. M. Allen, formerly of Elizabeth, N. J., was elected president of the Garford Motor Truck Co. at the regular meeting of the board of directors, succeeding E. R. Curtin, recently resigned.

Mr. Allen has had many years' experience in motor truck and bus manufacture, one of his longest connections being with the Autocar Co., Ardmore, Pa. Mr. Curtin will continue as a member of the board of directors.

# A.E.A. Analyzes Causes of Loss Through Returns

## *Seeks to Bring About Better Merchandising Conditions for Both Dealer and Jobber—Losses Heavy*

CHICAGO, April 22.—The added cost of doing business in the automotive equipment field, due to the return of merchandise by retailers and allowances made to retailers, has been attacked by the merchandising department of the Automotive Equipment Association with the object of applying corrective measures. In the first report on returned goods, just published by Arthur R. Mogge, merchandising director of the A. E. A., it is shown that in the cases of some automotive jobbers returned goods and allowances amounted to as much as 11 per cent of their total sales. The average for 115 jobbers was 5.3 per cent. The average for returned goods alone, not taking into account allowances, was 4.1 per cent.

This problem is approached by the A.E.A. from the standpoint of creating better merchandising conditions for both the jobber and the retailer, and it is recommended that hereafter all jobbers keep a careful record of their returns in order to determine whether the fault lies with the jobber or the retailer.

This first report of the A.E.A. is based on replies to a questionnaire submitted to the jobbing members. An analysis of these replies showed that of the total number of credits allowed for returned goods the greatest single cause was customer's error in ordering. This cause accounted for 21.4 per cent of the returns for twelve jobbers.

Other causes and the percentage due to each were given as follows:

Salesman's error, 8.8 for 12 jobbers.
Order writer's error, 2.9 for 10 jobbers.
Price clerk's error, 8.8 for 11 jobbers.
Extension clerk's error, 4.8 for 8 jobbers.
Shipping clerk's error, 4.7 for 10 jobbers.
Defective merchandise, 8.5 for 11 jobbers.
Exchange arrangement, 8.6 for 9 jobbers.
On trial merchandise, 4.5 for 9 jobbers.
Credit reasons, 5.7 for 11 jobbers.
Goods not as ordered, 7.3 for 11 jobbers.
Lost merchandise, 2.6 for 10 jobbers.
Miscellaneous reasons, 6.9 for 9 jobbers.

It was found that many jobbers complained that dealers pack up merchandise and return it without authorization and the jobber doesn't know what he has or why until after the packages have been accepted and opened. To eliminate this practice some jobbers have issued instructions that no packages from customers will be accepted unless they bear a special O.K. return tag issued by the jobber on the outside of the package. These tags are issued by the jobber's claim department only after a complete and satisfactory report has been filed either by the salesman or the customer.

Realizing that a considerable proportion of returns are due to errors of their salesmen, some jobbers have adopted the plan of penalizing salesmen for returns accepted from their territory. One jobber penalizes salesmen for return due their errors by deducting from their sales volume before commissions are allowed

(*Continued on page* 761)

# American Progress Praised by German

## Ferdinand Frank, Berlin Metal Magnate, Visits Centers of Auto Industry

NEW YORK, April 21—After a round trip to the centers of the American automobile industry extending over several weeks, Ferdinand Frank, head of the Frankonia Metallwerke of Berlin, Germany, returned today on the Reliance of the United American Line to his native country. Mr. Frank came here to learn at first hand of the latest developments in the metal pressing and allied industries and to purchase equipment for his firm.

The Frankonia Works have long been prominent in the German metal stamping trade, making pressed metal parts for the automobile and bicycle industries and household ware. They were the first, in 1905, to manufacture the type of automobile fender known as the crown fender which is now in almost universal use.

To a representative of AUTOMOTIVE INDUSTRIES, who saw him at the Astor Hotel shortly before his departure, Mr. Frank said he was greatly impressed with what he had seen here and highly satisfied with his trip. In his estimation, no other country was on a par with America in regard to engineering progress. He said:

One factor contributing to the success of the American industries is that they have an enormous home market, which enables them to immediately introduce every technical improvement as soon as it appears. Besides, production in very large quantities gives rise to constant improvements in methods, which place America in the lead as a manufacturing nation.

American manufacturers also have a great financial advantage over us, which enables them to carry out any kind of an experiment that looks at all promising, thereby constantly improving the quality of their products and to lower their cost of manufacture. Attempts made in certain quarters to decry American goods as inferior because of their low prices are bound to fail of their object, because in reality quality products are turned out, embodying a high grade of workmanship.

Inspection of the American plants was of extraordinary interest to me because of the technical developments I observed, and what made my trip particularly pleasant was that wherever we called we met a hearty welcome. In this respect, too, other countries might learn from America. I shall always remember the many courtesies enjoyed during my trip.

Asked for a comparison of German and American sales methods, Mr. Frank said the sales expenses were much larger here than in Germany. On the other hand, American industrialists are more enterprising, and the large scale on which business is carried on here makes it less necessary to cut sales costs.

As regards the future of the German automobile industry, it was his opinion that it necessitated a material reduction in the number of models turned out and in the more extensive use of metal pressings. At present the demand is particularly good for small cars.

Mr. Frank was accompanied by his private secretary, Dr. Krause.

# Changes Made in Chevrolet Chassis

DETROIT, April 21—In line with the changes made in the passenger car line early this year, and described in these pages, the commercial chassis of the Chevrolet Motor Co. are being delivered with improved mechanical units.

The commercial car chassis, which lists at $425, is practically a duplicate of the passenger car chassis and is readily distinguished from the older model by the change from cantilever to semi-elliptic springs. The utility express truck chassis of 1-ton capacity, which lists at $550, continues the cantilever springs at the front, with semi-elliptics at the rear.

While the commercial chassis has the new pressed steel banjo rear axle, which is a feature of the passenger car line, the larger express chassis, due to its greater load capacity, retains the heavier cast axle of its predecessor. Equipment includes Alemite system, electric starting and lighting, speedometer, oil pressure gage, hood, front fenders, running boards, dash and toe boards. The smaller chassis weighs 1550 lb. and the larger 1950 lb.

### STUTZ EXCEEDS QUOTAS

INDIANAPOLIS, April 22—Stutz Motor Car Co. reports that several distributing centers, including Boston, Pittsburgh, New York and Chicago, are certain to exceed their April quotas by a considerable margin, and the number of early orders for the month indicates that during April New York and Chicago together will require as many Stutz cars as were produced during March. The plant is rapidly approaching capacity production, but a shortage within a short time appears imminent.

# Two De Luxe Models Added to Moon Line

## New Sedans Priced at $1,595 and $1,785—Changes in Series A Chassis

ST. LOUIS, April 20—Moon has added new de luxe two and four door sedan models, priced at $1,595 and $1,785 respectively, on its Series A chassis which has a wheelbase length of 113 in. and a six-cylinder 3⅛ x 4¼ in. engine. While this chassis has undergone no radical change it has been improved in a number of important respects.

The stock in the frame has been increased from ⅛ to 5/32 in. in thickness and this, along with additional gussets on the cross members, has increased its rigidity materially. The model O Ross steering gear used formerly has been replaced with the larger model C to give easier steering, and the drag link assembly has been strengthened. The lighting switch now is mounted on top of the steering column along with the spark and throttle controls.

**Ball Bearing Generator**

In the engine, the camshaft bearings now are bronze bushings instead of the steel on iron construction used formerly. The generator has ball bearings instead of the plain bushings used in the past and a set screw adjustment has been provided at its flange to facilitate maintenance of timing chain tension. Tubular piston pins, ⅞ in. in diameter, have been adopted and they have their bearing in bronze bushings in the upper ends of the connecting rods. The Stromberg carbureter now is regular equipment.

The rear axle is practically a duplicate of the 6-50 type. It is equipped with Timken bearings throughout and the differential is a Brown-Lipe-Chapin product with 3½ per cent nickel steel gears which are lapped to insure quietness. The width of the brake bands has been increased ¼ in. and the anchor pin has been moved forward 45 deg. to increase the wrapping effect. The tubular propeller shaft is ¼ in. larger in diameter to eliminate whipping and vibration.

**Duco Finish**

The two new sedans both have broad belt panels formed by moldings, the lower of which is carried forward the length of the hood to the radiator shell. The two-door job is finished in marine blue below and black above the belt, with the belt panel, cowl and top of hood done in gray. On the four-door job the lower panels are sage green with the belt in a darker shade and the top black. Both bodies are finished with Duco. The top and rear quarters of the two-door sedan are leather with bright nickel and black landau irons.

Both models are upholstered with blue-gray mohair and the hardware is in Butler finish. They are equipped with dome light, instrument board with all instruments including gasoline gage mounted under one oval glass covered panel at the center, vertical-ventilating type windshield, flush type cowl ventilator and sun visor integral with top. The four-door model has a silk woven robe rail, arm rests at rear seat and heater, and the two-door model has a trunk rack at the rear.

# Ver Linden Formally Named Peerless Head

CLEVELAND, April 22—Edward Ver Linden was elected president of the Peerless Truck & Motor Corp. at a meeting of the board of directors held at the Peerless plant. Mr. Ver Linden was elected president and general manager of the Peerless Motor Car Company, which is the operating company, on Feb. 12 and has been in charge of the company's business since Feb. 16.

L. R. German, who is Mr. Ver Linden's assistant in the management of the company, was elected vice-president of the corporation. F. A. Trester, secretary, and John F. Porter, treasurer, were re-elected to their respective offices. A. L. Pearce was reappointed assistant treasurer.

At the annual meeting of the corporation in Richmond, Va., April 7, directors were elected as follows: Edward Ver Linden, C. E. Sullivan, H. C. Robinson, H. A. Tremaine, Victor W. Sincere, L. J. Wolf, Fred. R. White, G. A. Coulton, W. R. Angell, L. R. German and F. A. Trester.

# Hartz Makes Record in 50-Mile Race

CULVER CITY, CAL., April 20—Harry Hartz, driving a Miller Special yesterday in a 50-mile race on the Speedway, established a new record for the distance at 135.2 m.p.h. Preliminary 25-mile heats were won by Duray, DePaola, Bordino and McDonagh.

The fastest sustained speed of the day was made by DePaola when he averaged 136.7 m.p.h. for 15 miles. The only semblance of an accident was when Cooper blew a tire while forcing Hartz in the final and skidded about 300 yards without overturning. The crowd was small, approximately 10,000 viewing the races.

**FORGY REPRESENTS MAKERS**

NEW YORK, April 21—J. E. Forgy, Inc., has been organized in New York and will act as manufacturers' sales agents for companies producing materials and equipment for the automotive industry.

The business will be in direct charge of J. E. Forgy, who has had a long experience as a custom body builder and has recently been New York sales manager for the Holbrook Co., custom body builders, of Hudson, N. Y.; he was for a number of years purchasing agent for the Locomobile Co. at Bridgeport, Conn.

# No Frame Monopoly Replies Midland Co.

## Active Competition in Supplying Frames to Car Makers, Trade Commission Told

WASHINGTON, April 23.—Denying that its acquisition of the Parish & Bingham Corp. and the Detroit Pressed Steel Co. was to restrain interstate commerce or the sale and distribution of automotive frames, the Midland Steel Products Co. in its answer before the Federal Trade Commission this week vigorously asserts it is not violating Section 7 of a Congressional act concerning unlawful restraints and monopolies.

It is the contention of the Midland Steel Products Co. as set forth in its answer that any increase in the number of automotive frames sold by them over the number formerly sold by the several companies is due "solely to increase in the number of frames required by the customers of said companies and not to the acquisition by us of any new customers formerly served by competitors."

Further statement is made in the answer that there were prior to the acquisition of the properties by the Midland Steel Products Co. and now are six manufacturers of automotive frames and parts therefor other than themselves which are in active competition with them.

"Prior to the acquisition of the properties," continues the answer, "forty-seven manufacturers of automotive vehicles purchased the frames used therein from the Parish & Bingham Corp., the Detroit Pressed Steel Co. and the Parish Manufacturing Co. At present the respondent is selling frames to only forty-two manufacturers of automotive vehicles, two of the said manufacturers being new companies formed since the said acquisition."

# Two New Open Models Added to Marmon Line

INDIANAPOLIS, April 20—Two new open models, a five-passenger club phaeton and a seven-passenger club touring, each listing at $3,465, have been added to the Marmon Series 74 line. A feature of the equipment of these models is a khaki colored boot for the top and seat covers of the same shade. Nickel plated fittings are used extensively, the bracket supporting the windshield wings being finished in this manner, as are the cowl lamp brackets and the rear view mirrors on each front fender. Other equipment includes windshield wiper, combined cigar lighter and handy lamp, dash carbureter adjustment, combination tail, stop and backing light, and balloon tires. The finish on both models is Duco, a choice of three color schemes being offered.

# M.A.M.A. Figures Give Trend of Parts Business

## *Monthly Bulletin Survey Shows Gain in Accessory Trade This Year—Excellent Outlook for Spring Sales to Trade*

NEW YORK, April 22—For the first time, definte figures showing the trend in automotive parts and accessory business, is made available through a bulletin issued by the Motor and Accessory Manufacturers' Association. A large and representative group of members participated in the survey, which is to be a monthly feature of the new bulletin. Every month, through the publication, the association will report on general business conditions and give the latest information on all the automotive industries.

The survey shows a gain since the first of the year and an excellent outlook for the rest of April and May. Sales of members in February ran about even with January, but they made a gain in March of 32 per cent over the first month of the year.

### Trade Sales Increase

The M. A. M. A. survey, based on the wholesale value of shipments to customers throughout the first quarter of the year, shows a slight gain in February and an advance for March over January of 38 per cent in original equipment business done with the car and truck manufacturers. In sales to the trade the progress was steady throughout the first quarter in accessory and service equipment sales, reaching 59 per cent for March over January in accessories and in service equipment, that is, repairshop machinery and tools, 62 per cent over January. Sales of replacement parts to the trade alone showed a recession. They dropped considerably in February, climbing back in March to within 5 per cent of the January figures.

Sales to the trade are expected to continue their gain throughout April and May, when seasonal conditions are always favorable. Original equipment sales, which have advanced rapidly in anticipation of the heavy March and April car and truck production, are expected to drop somewhat in April, in advance of an expected recession in May of motor vehicle production.

### Survey Representative

In a large group of manufacturers reporting sales of original equipment, the average March business was $170,000. The largest March sales for any single company were approximately $2,000,000, while several had sales of $1,000,000 or slightly more. A number of companies did approximately half a million dollars' business in March and a good many reported $100,000 or slightly under. A few had sales of only a few thousand dollars, all these figures showing the representative nature of the survey. In somewhat smaller groups which reported

(*Continued on page* 762)

# Survey Shows Tire Stocks at Low Point

## Rubber Division Reports 24,286 Dealers April 1 Had 1,471,907 Casings on Hand

AKRON, April 22—On the basis of returns from 24,286 dealers in the United States, the preliminary report of the semi-annual survey of the Department of Commerce shows a decline of about one-third in stocks of automobile tires in the hands of dealers as of April 1, compared with the report of April 1, 1924.

An unofficial compilation of April, 1924, showed stocks of 1,648,993 held by 17,797 dealers, an average of 92.6 casings per dealer, against 60.6 casings per dealer on April 1, 1925.

The Department's latest report shows 1,471,907 casings, 135,366 balloon casings, 2,448,064 inner tubes and 31,984 solid and cushion tires in the hands of dealers on April 1, 1925. Casings held by 26,161 dealers Oct. 1, 1924, totaled 1,402,879, averaging 53.6 casings per dealer.

### Effect of Spring Dating

Rubber trade experts state that the increase in average stocks per dealer in April, as compared with October, is a reflection of the natural trend of the trade in connection with the effect of the spring dating system. Dealers would naturally carry heavier stocks in the spring than fall.

Reports from tire companies representing 75 per cent of the industry show 6,696,358 casings and 9,767,053 inner tubes held by manufacturers on Feb. 28, 1925.

On this basis manufacturers' stocks were about 12,244,000 casings and 2,145,000 inner tubes larger than last year. It is pointed out, however, that this increase is balanced more or less by decreased stocks in the hands of dealers.

# Income Statements Show Gain in 1925

## Car Producers' First Quarter Earnings Higher Than in Same Period of 1924

NEW YORK, April 22—The improved position of automobile companies this year, as compared with last, is reflected in quarterly earnings statements that have just been issued. Conservative production policies, together with the better demand for new cars, are bearing fruit in higher net income.

A most impressive showing is made by Willys-Overland Company. Earnings after interest and other deductions, but before Federal taxes for the quarter ended March 31, 1925, were $3,171,466, or more than a million dollars more than the net for the entire year 1924.

### Dividends Accumulate

Not less significant is the action of the board of directors of the company, which voted a quarterly dividend of $1.75 on the preferred stock, to be paid May 9 to holders of record April 3. This marked the first dividend payment on the stock since October, 1920, in the interim dividends of $30 having accumulated.

President John N. Willys stated that sales were holding up in the field and that all plants were operating at capacity. A new record of 1193 Overlands and Willys Six Knight cars in one day was made on April 20 at the Toledo and Toronto plants. Production is averaging 1100 cars a day this month.

The quarterly record of another large producer, Dodge Bros., Inc., is equally good, showing net income before Federal income taxes of $6,291,544, approximately 77 per cent above the net for the corresponding period last year, and better by 39 per cent than the first quarter of any year since 1920.

### Hupp Profit Statement

In another class, the Hupp Motor Car Corporation shows the same tendency, the quarterly net profit being $892,963 after all deductions, including tax reserves. After allowing for dividends on the preferred stock, this was equal to 93 cents a share earned on the $10 par common stock outstanding, against 42 cents a share in the corresponding period of 1923.

The report of the Paige-Detroit Motor Car Co. for the first quarter shows a slight drop in earnings, easily accounted for by radical changes in engine design and other unusual factors. The net after deductions was $1.08 a share, against $1.37 for the first quarter of 1923. Sales were $11,799,664 for the first three months of this year, represented by 10,182 Paige and Jewett cars. Production schedule for the second quarter was 13,940 cars.

# Reeves Urges Repeal of War Motor Taxes

## N. A. C. C. Manager Gives Five Reasons for Automobile Prosperity

BUFFALO, April 22—Efforts to remove the Federal war time tax on automobiles will be one of the fundamental steps in maintaining prosperity both in the automobile trade and in general business, in the opinion of Alfred Reeves, general manager of the National Automobile Chamber of Commerce, in a talk today before the directors of the Buffalo Automobile Dealers' Association.

"A saving of $31 in the cost of the average car to the consumer can be brought about by the removal of these Federal taxes," said Mr. Reeves "and there is every evidence that the motorists in the country will make vigorous demands to have this reduction brought about. The automobile industry now pays all the taxes which other industries pay and at the same time bears the burden of the special war time sales tax. Governmental authorities have consistently acknowledged that these levies are inequitable and should be removed when conditions permit. The probability of a $400,000,000 Federal surplus gives reason to expect that this special tax on motor transportation will be entirely removed or very largely modified in the near future.

### Industry Outlook Good

"The automobile outlook is good. There are five major points which indicate that we may look for a period of conservative prosperity.

"These are:

"1. Lower taxes.
"2. Suburban development.
"3. Better financing.
"4. 'See American First.'
"5. The two-car family.

"The extent to which tax relief on motor transportation will affect general business favorably may be realized when we consider that the automobile industry employs more than 3,119,000 persons directly or indirectly.

"In addition to the purchasing power of this volume of employment, the success of the automobile business is important to other lines of effort when we realize that the automobile industry is a customer for

"46 per cent of aluminum production.
"52 per cent of plate glass.
"69 per cent of upholstery leather.
"80 per cent of crude rubber.
"15 per cent of hard wood lumber.

"Its effect on railroad prosperity may be noted when we realize that motor transportation products provide the steam roads with more than 2,000,000 car loads of freight annually.

"In addition to tax relief we are beginning to get away from the high cost of congestion. Cities are finding that it is more satisfactory to grow outward, establishing a number of retail neighborhood centers, than to try to crowd in everything downtown.

# *Business in Brief*

*Written exclusively for* AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

NEW YORK, April 22.—Some quieting in trade and industry is apparent, although not enough to suggest any such sharp decline as took place a year or two years ago. Commodity prices tended lower last week, while stock quotations were generally firm. Prolonged drought is seriously hampering the progress of crops in several Western States.

Car loadings in the week ended April 4 numbered 922,375, comparing with 931,395 in the preceding week and 862,096 in the corresponding period last year. Loadings of all commodities except miscellaneous freight and ore were less than in the week before.

Production of crude petroleum in the week ended April 11 averaged 1,993,600 barrels a day, comparing with 1,931,300 barrels in the preceding week and 1,953,350 a year earlier. The chief gain was in the output of heavy oil in Arkansas.

Consumption of lint cotton last month amounted to 582,674 bales, as against 550,132 bales in February and 485,840 in March last year. Spinning activity, as measured by active spindle hours, was nearly 22 per cent greater than a year earlier.

Preliminary foreign trade figures for March show exports of $452,000,000 and imports of $385,000,000, which compare with exports of $373,000,000 and imports of $334,000,000 in February, and exports of $340,000,000 and imports of $321,000,000 in March last year. Last month's export balance, amounting to $67,000,000, compares with $39,000,000 in February and $19,000,000 a year ago.

Business failures reported by Bradstreet's for the week ended April 16 number 365, as compared with 338 in the preceding week and 401 in the corresponding period last year.

The exportation of gold continued last month, but at a greatly reduced rate. Total exports amounted to $25,104,416 and imports to $7,337,322.

Bank debits reported by the Federal Reserve Board for the week ended April 15 were 5.6 per cent below the total for the preceding week, but were slightly above that for the corresponding period a year ago.

Fisher's index of wholesale commodity prices stood at 157.8 last week, as against 158.1 in the preceding week and 157.1 two weeks before. The average for March is 161.3.

Discounts by Federal Reserve banks increased $4,000,000 during the week ended April 15, with a gain of $13,500,000 in bills secured by Government obligations.

# Fokker Demonstrates Airplane Advances

## New Machine Resists Attempts at Stalling—Retains Lateral Control

LONDON, April 17—An improved commercial type of airplane in which the controls and the stabilizing surfaces are so arranged that normally the machine will resist successfully any but a determined effort on the part of the pilot to stall it, was recently demonstrated at Croydon Airdrome by Anthony G. Fokker, Dutch airplane manufacturer, whose machines played an important role in the World War.

Demonstrations were given on two distinct types of machines, one being a ten-seater Fokker monoplane with a Napier-Lion engine and the other an Avro biplane fitted with Handley-Page slotted wings.

Anthony Fokker piloting the machine bearing his name and carrying a full complement of passengers allowed the flying speed of the big monoplane to drop to the minimum, i.e., stalling point. Under this condition the plane gently put down its nose and so recovering the margin of speed, retaining throughout the whole period adequate lateral control.

The Fokker machine is so designed that unless intentionally forced into a stall it will not pass a critical angle. Mr. Fokker attained this end by the construction of the wing which is thick at the center and greatly tapered at the ends, and by careful refinement of control. General Sir Sefton Brancker, director of civil aviation in Great Britain, stated the demonstration marked a great advance in perfecting the safe operation of airplanes for commercial use and will mean the eliminating of a great many accidents which have in the majority of the cases been caused by loss of flying speed through stalling.

# H. J. Fuller Elected Rolls-Royce Head

SPRINGFIELD, MASS., April 22—Henry J. Fuller of New York has been elected president of Rolls-Royce of America, Inc. He will continue as chairman of the board of directors, a post he has held for several years. Mr. Fuller is a graduate of Worcester Polytechnic Institute and a director in numerous manufacturing concerns, among these being the Greenfield Tap & Die Corp., and the Savage Arms Corp. He is chairman of the board of the Gorham Manufacturing Co. of Providence, R. I., and was for seven years on the board of the Amercian Bosch Magneto Corp.

W. L. Wright, president of the Savage Arms Corp. and the J. Stevens Arms & Tool Co., has been elected a director of Rolls-Royce.

# Ford Purchase Plan Creates Sensation

## Inability to Make Deliveries Withholds System from Other Cities

DETROIT, April 22—Following hard upon the establishment of the Ford plan for handling used cars on a radically new basis, the announcement of the company's experiment with sales of new cars at a minimum down payment of $12.40 has, to put it mildly, caused a sensation in the industry at large. Interest is now focussed on whether the plan will be extended to other sections of the country, for makers of low priced cars may experience a competitive reaction from the low payment terms set by the Ford company.

The word from the factory is that consideration of extending the plan to other cities or to the country generally is held in abeyance largely because of inability to make deliveries on the scale that would be required. Factory production previous to the announcement of the new system of weekly payments was on a par with retail sales. With the plan in general effect the capacity of the plant would be far overtaxed, and the company will not attempt to create business that it cannot meet.

### Sales Stimulant

As production facilities are increased the plan will probably be extended to several other cities—enough to take up the increased number of cars. These cities will be determined by the company according to the estimated effect on sales. It is likely the weekly payment plan will be used by the company as a sales stimulant, when and where required, to keep retail business up to factory capacity.

There is no mistaking the fact that the plan got off to a tremendous start. Applications for cars in the Detroit district reached 4000 during the first three days of the operation of the plan, and, although later figures are withheld, there seems no doubt that both the company and the dealers are greatly pleased with the results to date. But some little time will be required, the company declares, before the permanent merchandising value of the plan can be fixed.

The experiment is continuing, all the paper being handled by the Detroit Discount Corp., under a special arrangement worked out between the Ford company and its Detroit dealer organization, the finance company passing on all applications and assuming responsibility for the completion of the deals.

Presentation of the plan is being made by dealers through a city-wide canvass. The terms of down and weekly payments as outlined represent minimum acceptable payments according to model, but higher payments may be made where convenient to the buyer. The addition of this plan gives dealer salesmen four buying plans to present in canvassing the non-owner field: all cash, one-third down and monthly payments, the new plan and the savings plan.

The most attractive from the point of view of immediate cash payment is, of course, the new plan, but the older ones represent a saving of finance charges.

### *PAYMENT SCHEDULE OF NEW FORD PLAN*

**DETROIT, April 22—The payment schedule for Ford cars under the plan recently tried in Detroit is as follows:**

| | Down payment | Weekly |
|---|---|---|
| Roadster | $ 12.40 | $ 5.00 |
| Roadster with starter | 18.80 | 7.00 |
| Roadster with starter and balloons | 20.80 | 7.00 |
| Touring | 12.60 | 5.00 |
| Touring with starter | 17.00 | 7.00 |
| Touring with starter and balloons | 17.00 | 7.50 |
| Coupe | 20.80 | 10.00 |
| Coupe with balloons | 23.80 | 11.00 |
| Tudor sedan | 40.20 | 12.00 |
| Tudor sedan with balloons | 68.20 | 12.00 |
| Fordor sedan | 83.40 | 13.00 |
| Fordor sedan with balloons | 111.40 | 13.00 |

**The basis of payment is the delivered price in Detroit, which includes war tax and handling charges, and is approximately 10 per cent higher than the list on the lower priced models and somewhat less on the higher priced.**

**Under the schedule of payments the purchase price is not necessarily completed in one year, but it is so arranged that only small balances are carried over, notes being renewed. These balances range from $24 to $90. It is, however, expected that payments will be completed without the necessity of carrying notes beyond the twelve months period in the majority of sales under the plan.**

# Ford Has New Pick-Up Body for Runabout Use

DETROIT, April 22—As a delivery unit to meet requirements for equipment lighter than that of the ton truck, the Ford Motor Co. has just added a pick-up body to its commercial car line. The price of the runabout complete with body is $281.

The new body is designed for use on the Ford runabout, taking the place of the rear deck, and is well adapted to all kinds of light hauling and quick delivery. Full protection against inclement weather is provided by the top and side curtains.

The new body is of all-steel construction and sturdily built. It is 3 ft. 4¾ in. wide and 4 ft. 8 in. long. Sides are 13 in. deep to the flare, so that loading space is sufficient to meet all demands of light delivery.

# Chevrolet Coupon Sales $6,000,000

## More Than 2000 of Certificates Now Sold Each Month—Began Last Year

DETROIT, April 22—Cars and trucks aggregating $6,000,000 have been sold under the Chevrolet 6 Per Cent Purchase Certificate Plan since this copyrighted method was inaugurated among Chevrolet dealers seven months ago. More than 2000 of the certificates are now sold each month.

Under its provisions a prospective car owner may start with an initial payment as low as $5. If desired, a larger first payment may be made. This is followed by weekly or monthly installments suiting the convenience of the purchaser. These payments are then entered upon the back of the purchase certificate. When the sum of the payments plus the 6 per cent interest earned reaches one-third of the retail price the car is delivered. The balance may be met either outright or on a deferred payment plan. Another feature is a provision that a certificate holder who already owns a car gains a further credit toward his new automobile of 6 per cent of such amounts as he may spend with the dealer for service, repairs or accessories on his old machine.

The certificate savings are amply safeguarded. They are banked in a separate trustee's account in a local bank. Over 2000 of these accounts are established in different banks in the United States. In addition all money paid in on a Chevrolet purchase certificate is insured against all loss by a strong and well known insurance company.

# New Models Added by Paige-Jewett

DETROIT, April 20—Paige-Detroit Motor Car Co. has added a five-passenger coach priced at $1,260 to its Jewett line and a four-door brougham listing at $2,195 to the Paige line.

The new Jewett coach seats five and is said to have the same interior dimensions as the sedan model. As a result leg room is ample and there is space for packages behind the front seats. The width of the doors is 36 in., which permits easy access to the rear seats. The length of the car is accentuated by a belt line molding which is carried forward to the radiator shell. The exterior finish is cobalt blue lacquer and the upholstery is a blue-gray shade.

The Paige brougham is finished in Bolling green lacquer, with which the upholstery harmonizes. Equipment on this model includes heater, windshield wiper, dash gasoline gage, trunk and snubbers.

# Sees Good All-Year Sales to Farmers

## Seasonal Buying No Longer the Rule, Says W. R. Tracy of Oakland Co.

PONTIAC, April 20—Returning from a two months' trip through the agricultural districts of the West and Middle West, W. R. Tracy, assistant director of sales of Oakland Motor Car Co., declares sales of automobiles will be as large in this district in the second-half of the year as they are now proving to be. He bases this assertion largely upon the fact that this is the first year that the general low price of closed cars has had opportunity to wipe out the seasonal buying tendencies formerly existing.

The increase in good roads in the agricultural districts also will be of foremost importance in promoting the all-year sale of automobiles in these districts, Mr. Tracy said, because they make possible the all-year use of cars. Elimination of yearly models as in the case of Oakland, Mr. Tracy said, also is of importance in making for steady business throughout the year.

Business conditions are good throughout the farming districts Mr. Tracy said, fruit and grain crop outlooks being especially favorable. Lumber and fishing industries in the Northwest have not been good recently but are improving. Some conservatism in buying was enforced on farmers in the grain growing States through the recent declines in prices, but the harvesting in midsummer of the new crops will bring them actively into the market, Mr. Tracy said.

Conditions through the year will not be of boom nature, Mr. Tracy said, but they will be steady and will show steady increases in buying.

### NEW CASTINGS PLANT

FLINT, April 21—Ground has been broken for the erection of the first unit of the new Flint Malleable Castings Co. plant, the building to be ready for operation in three months. The company will specialize in malleable castings for the automotive industry, the first unit having capacity for 9000 tons yearly and employing approximately 200 men.

### JOBBER DATA COMPILED

(*Continued from page* 756)

150 per cent of the invoice of the returned merchandise.

It was found to be very difficult to get accurate information from jobbers on the amount and causes of their returns.

The A.E.A. expects to continue its study of this problem and it urges that all jobbers devise methods of more accurately determining the amount and causes of their returns.

### 250,000*TH FORD BUILT IN ENGLAND*

**DETROIT, April 21—The quarter million mark was reached in Ford production in England at 12.27 p. m. Friday, April 17, when car No. 250,000 left the final assembly line in the plant at Manchester, according to a cablegram received by Edsel B. Ford from the English company. This is a production record for the automobile industry in England and is significant also from the fact that cars manufactured in Manchester are absorbed in the British Isles.**

**All Ford cars made in England are built of approximately 90 per cent British materials. Further, the policy of the English company requires that British labor only be employed. And in accordance with this policy, those parts not made in the Manchester plant are fabricated by other English industrial manufacturers. All cylinder blocks and many other parts are cast and machined in the plant at Cork, Ireland, which operates under the name of Henry Ford & Son, Ltd.**

**Popularity of the automobile in England, both as a passenger and commercial car, has been steadily increasing, registration figures as of Jan. 1 showing a total of 778,211 motor vehicle units in Great Britain.**

# Star Coupster Model Introduced at $625

NEW YORK, April 21—Durant Motors, Inc., has brought out a two-passenger coupster model on the Star chassis priced at $625. Although the new model is essentially a roadster type, it also possesses the advantages of a closed body.

It has a permanent top and the passenger compartment may be inclosed quickly and easily, simply by pulling down the side curtains, which are mounted on rollers concealed in the top directly over the doors. The windshield is a one-piece design and a cowl ventilator is regular equipment. The rear light in the top is glass. Upholstery is gray Spanish finish, artificial leather and the interior walls and ceiling of the top are lined with cloth of the same color. The lower portion of the body is finished in blue lacquer and the upper portion in grained artificial leather.

### CONNECTING ROD DISCUSSION

CLEVELAND, April 21 — Several speakers at the April 20 meeting of the Cleveland section of the Society of Automotive Engineers gave talks on connecting rod machining. The talks and discussions were concerned with the methods used in this work by automobile and truck companies in Detroit.

# Delco-Light to Take Over Dayton Factory

## Expansion Leads to Use of Plant to Be Vacated by G. M. Research Corp.

NEW YORK, April 22—The Delco-Light Co., a division of General Motors Corp., will start production at the General Motors research laboratories in Moraine City, near Dayton, Ohio, when the move of the corporation's research department to Detroit and elsewhere is completed. This may take several months.

The announcement coincides with reports that show an enormous increase in Delco-Light business during the past year and continuing into 1925. It is indicated that sales of Frigidaire units this year will reach 50,000, compared with 21,000 in 1924, 5000 in 1923 and 2200 in 1922. During the first three months of this year shipments from the factory of all Delco-Light products had a retail sales value of $7,100,000, approximately double that for the same period a year ago. In March sales were $3,800,000, a gain of $2,000,000 over last March.

The Moraine City laboratories will be used for the overflow production necessitated by the expansion of the company and as a warehouse. The plant was originally designed as a factory, and it is not believed that any structural changes are in contemplation.

# Registrations Show Big Gain in Massachusetts

BOSTON, April 21—Some idea of the way Massachusetts people are investing in motor vehicles is shown by the figures for the first quarter of 1925 in registrations, compared with the same period a year ago, and also for the month of March this year and last. There were 399,226 motor cars and 73,804 commercial vehicles, totaling 473,030, listed for the first three months. In 1924 the figures showed 336,171 cars and 67,068 trucks, or 403,239 combined. So this year shows a gain of 63,055 cars and 6736 commercial vehicles, or a combined total of 69,791. This means 17.3 per cent gain. The gain for the entire year 1924 was 20 per cent, but at the present rate of registration the total of a year ago will be passed before the fall of 1925.

The gain in March this year over a year ago is close to 35 per cent A year ago March registered 42,578 cars and 3958 trucks, totaling 46,536. This year the figures for the same month were 57,614 cars and 5133 trucks. That was an increase of 15,036 passenger vehicles and 1177 commercial, or a combined total of 16,213.

# Record 1925 Exports of Cars Predicted

## Division Reports from Agents Promise Greater Volume Than Last Year

WASHINGTON, April 21 — Record-breaking United States automotive exports of 1924 are likely to be surpassed this year if prosperous conditions of auto markets of the world for the first three months of 1925 can be taken as a criterion, according to Percy Owen, chief, automotive division of the Department of Commerce. With but few exceptions reports from foreign agents of the department reflect conditions promising foreign trade for American manufacturers and exporters in even greater volume than last year.

### ARGENTINA

The year 1925 has started with heavy automobile sales and prospects for the immediate future are bright. The betterment in dollar exchange has enabled car importers to make fairly large reductions in prices and it is generally believed that the number of cars sold during 1925 should reach 40,000. The public demand is for American automobiles, and the importation of American passenger cars keeps well over 97 per cent of the total.

### AUSTRALIA

The automotive trade in Australia is quiet at the present time. The overstocking of some months past has been absorbed, with decided slackening of imports under the five-month period, July-November, 1924, as compared with the previous half year. Even with this, however, the five-month period showed a large increase over the 1923-24 total, and present stocks are sufficient to meet demands.

### AUSTRIA

General economic conditions in Austria continue unfavorable. The buying power of the public is still very limited. In spite of this difficulty dealers in American cars expect to exhaust their 300-car quota this year and it is felt that prospects of future business, not only in Austria, but throughout Central Europe, that once the annoying restrictions are removed, are such as to justify American importers in keeping strongly after the market.

### BRAZIL

The first quarter of 1925 has been one of extreme activity in the local automobile market. The expected increase in the demand for cars materialized, and by the end of January practically all the local American agencies and branches found their stocks depleted to such an extent that unfilled orders soon became a source of considerable irritation to them.

### CUBA

Sales of low-priced cars continue to show a decline. Sales of medium-priced cars showed an increase during the quarter ending March 1, and those of the high-priced cars remained practically unchanged. A 30 per cent increase in sales of light trucks has occurred and continued strong trade is anticipated in this line. Heavy trucks continue to sell slowly, but some improvement is anticipated since existing stocks have been largely cleared away.

(*Continued on page* 763)

## *MARCH TRUCK OUTPUT TOTALS* 45,012 *UNITS*

**WASHINGTON, April 23 — March production of trucks in the United States and Canada, totaling 45,012 units, was equalled only once before in the history of the industry. In May, 1923, a total of 45,677 trucks were manufactured, the next nearest figure being in June, 1923, when 42,453 were produced.**

**The March output of motor vehicles in the United States and Canada, according to the Department of Commerce, was 332,108 passenger cars and 45,012 trucks. The March, 1924, total was 357,006 passenger cars and 36,417 trucks, while February of this year showed 343,445 passenger cars and 32,881 trucks.**

**Figures for the United States alone show 319,094 passenger cars and 42,923 trucks, and 242,006 passenger cars and 32,669 trucks for the preceding month.**

**Production for the last year and the first three months of 1925 in the United States and Canada, according to the latest revised figures of the Department, are as follows. The table is based on figures received from 175 manufacturers for recent months. March data from 11 small firms was not received in time for inclusion in the report.**

| | Cars | Trucks | Total |
|---|---|---|---|
| **1924** | | | |
| Jan. ... | 293,823 | 30,723 | 324,546 |
| Feb. ... | 343,445 | 32,881 | 376,326 |
| March .. | 357,006 | 36,417 | 393,423 |
| Total (3 Mos.) | 994,274 | 100,021 | 1,094,295 |
| April ... | 346,356 | 37,911 | 384,267 |
| May ... | 286,273 | 35,281 | 321,554 |
| June ... | 225,034 | 29,041 | 254,075 |
| July ... | 244,504 | 26,368 | 270,872 |
| Aug. ... | 255,194 | 28,614 | 283,808 |
| Sept. .. | 263,468 | 31,942 | 295,410 |
| Oct. ... | 260,845 | 32,447 | 293,292 |
| Nov. ... | 204,316 | 27,893 | 232,209 |
| Dec. ... | 182,055 | 27,509 | 209,564 |
| Total . | 3,262,319 | 377,027 | 3,639,346 |
| **1925** | | | |
| Jan. .... | 212,909 | 28,099 | 241,008 |
| Feb. ... | 252,785 | 34,334 | 287,119 |
| March .. | 332,108 | 45,012 | 377,120 |
| Total . | 797,802 | 107,445 | 905,247 |

### MATHESON GIVES TALK

DETROIT, April 21—C. W. Matheson, vice-president and director of Oakland Motor Car Co., addressed the Michigan Automotive Trade Association at a regional meeting in Port Huron, held under the auspices of the Port Huron Dealers Association. Mr. Matheson emphasized the necessity for close application to business fundamentals for success in automotive merchandising. Louis Weil of Port Huron was toastmaster.

# Consistent Increase in Chrysler Sales

## March Shipments Exceed All Records—Plan Export Sales Expansion

DETROIT, April 22 — The regular meeting of Maxwell Motor Corp. and Chrysler Motor Corp. stockholders was postponed this week until May 12 to afford additional time for working out details of the plan to change the basis of the Maxwell-Chrysler stock. W. P. Chrysler, president and chairman of the board, drew attention of stockholders to the present outstanding position of the company.

He said in part: "The total number of cars Maxwell and Chrysler sold during 1924 was 82,115. Production and shipments during the month of March were again the largest in the history of the corporation, shipments aggregating 7633 Maxwells and 4545 Chryslers.

"Inventories of Maxwell cars in the hands of dealers and distributors at the present time are approximately 42 per cent lower than at the same time last year. Retail sales in the United States are each week showing consistent increase. The reception accorded the Chrysler car in the export territories during the past several months has been extremely gratifying and your corporation is now actively engaged in an intensive survey and development of the export field which gives promise of absorbing a steadily increasing production of our product.

"The number of sales agreements with distributors and dealers, representing the points of contact of the company with the motoring public in the United States at this time, exceeds by more than 30 per cent the aggregate of such agreements one year ago."

## M. A. M. A. Figures

(*Continued from page* 758)

sales to the trade, the average March business was $65,000 per company in replacement parts $70,000 in accessories and $70,000 in service equipment.

The new M. A. M. A. Business Bulletin contains in addition to detailed figures of parts and accessory sales in the domestic and foreign fields, much detailed information on car and truck production and on sales conditions in various distribution territories of United States and Canada. The monthly bulletin supplements and amplifies the weekly "High Spots" information service, maintained by the association for several years.

### SET JACKSON SALE DATE

**DETROIT, April 21—Sale at public auction of the former Jackson Motor Car Co. at Jackson has been set for May 23. On two previous sales dates no offers for the property were made, resulting in postponement to the new date.**

# Men of the Industry and What They Are Doing

### Oakland Sales Changes

J. C. Mathews is now assistant director of districts for the Oakland Motor Car Co., and G. A. Johnson has been named assistant sales development director. Mr. Mathews was formerly in the export department of Dodge Brothers, lately specializing in promoting overseas sales of Graham Brothers trucks. Mr. Johnson has been a member of the Oakland organization for the past seven years, recently having been retail sales manager at the Chicago branch.

### Morton Made Piston Official

Allen W. Morton was elected vice-president and chief engineer of the American Hammered Piston Ring Co., Baltimore, at a special meeting of the directors. He has been connected with the company in engineering capacities for the past five years.

### Holler Resigns from Flint

W. E. Holler has resigned as vice-president and general manager of Flint Motor Co. Before joining the Flint organization he was general manager of the Imperial Wheel Co. His plans for the future have not been announced.

### Fekete Heads Hudson Engineering

S. I. Fekete has been named chief engineer of the Hudson Motor Car Co., succeeding G. G. Behn, who recently resigned. Mr. Behn will serve in a consulting capacity under the title of advisory engineer.

### Jenkins Leaves Flint Branch

A. F. Jenkins, manager of the Flint Motor Co. branch in Flint, has resigned. He was a member of the Dort sales force for seven years before becoming connected with the Flint organization.

### Magee Elected Hewitt Official

W. A. Magee was elected secretary and treasurer of the Hewitt Rubber Co., at a recent directors' meeting following the acquiring of the control of the company by J. H. Kelly and S. V. Springer.

### LaMar Joins Jefferson

V. K. LaMar has joined the sales organization of the Jefferson Electric Co., and will have charge of the southwest territory, with headquarters in Kansas City.

### Title Recovers from Operation

T. J. Title, chief engineer of the Lincoln division of Ford Motor Co., is recovering satisfactorily from a recent operation for appendicitis.

### Pickens Directs Dyer Sales

R. A. Pickens has been appointed general sales director of the Dyer Co., Cambridge, Mass., manufacturer of Blue Kore pistons.

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## Distributor Reports Australian Progress

NEW YORK, April 22—Peter MacIntosh, Sydney, Australia, Buick distributor for New South Wales, is spending a few weeks in New York on one of his periodic visits to this country. Mr. MacIntosh has sold Buicks for over 12 years and last season sold 2491, which is double the number of the previous year. Mr. MacIntosh reports that sales of other makes of cars have a proportional increase.

Good business in New South Wales is largely due to the unusual prices for wool, wheat and butter, and he estimates that $500,000,000 worth of these products will be exported from Australia in the fiscal year June, 1925, to June, 1926. This will be a new record for the Commonwealth.

Wool prices are higher than at any other time in history, the Australian farmer securing $1.18 per lb. The farmers have been obtaining approximately $1.60 per bushel for wheat, so that these prices, coupled with the unusually favorable season, mean much to Australia.

### Roads Improved

Mr. MacIntosh has approximately 110 dealers and states that 70 per cent of his sales are in the rural areas; and further that the motor car has been the greatest influence in Australia to keep the people living contentedly on the land. So large a percentage of cars owned in rural territories means that road improvement has been progressing rapidly. Around the cities are tar and macadam highways with some cement. Gravel roads predominate in the country.

The registration fees, which are approximately a cent a pound on motor cars, are supposed to be used for highway improvement. There is also a gasoline tax of 1½ cents per gallon.

The closed car movement is gaining headway, although during the past season approximately 95 per cent of the cars sold were open types. Many of the closed car bodies are imported, which makes the cost unusually high.

At present the wealth per capita in Australia is higher than in any other country in the world. This fact, coupled with general improvements throughout Australia, augurs well for the future of the motor industry.

## L. P. Fisher Heads Cadillac Motor Co.

### Succeeds H. H. Rice, Who Is Made Assistant to President of General Motors

DETROIT, April 22 — Lawrence P. Fisher, vice-president of General Motors Corp., has been elected president of the Cadillac Motor Co., succeeding Herbert H. Rice, who becomes assistant to Alfred P. Sloan, Jr., president of General Motors. The action was taken at a recent meeting of the board of directors.

The new Cadillac president is a member of the well-known Fisher family, who, in connection with the Fisher Body Corp. and the parts business of General Motors, have occupied a prominent position in the industry for some time. Mr. Rice is one of the pioneers of the industry and in his new position his experience and ability will be made available to all the activities of General Motors.

Mr. Rice made his first connection with the budding automobile industry when he joined the Pope Manufacturing Co. in 1893. He held various positions of importance with the Waverly interests of Pope, organizing the Waverly Automobile Company in 1908 to succeed the Pope Co. In 1916 he joined General Motors as treasurer, afterward becoming vice-president and in 1921 president of Cadillac.

Mr. Fisher held various executive positions with the Fisher Body Corp., prior to its inclusion in the General Motors group in 1919 and continuing after the purchase was effected. He was elected a director of General Motors in 1924 and vice-president this year.

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## Record Exports Expected

(*Continued from page* 762)

**EGYPT**

Continued optimism is the predominant sentiment in the Egyptian automotive trade with regard to the second quarter of 1925. Unusually high prices realized this season for Egyptian cotton in the world's markets have brought the motor car within the reach of the averagely prosperous (fellaheen) native farmers.

**PORTO RICO**

The automotive market of Porto Rico has shown a marked degree of prosperity during the first quarter of 1925, although general business conditions throughout the island are considered to be dull. The registration of 318 new cars and trucks during February set a new record for monthly registrations in the automobile business of Porto Rico, while registrations for January, 276 cars and trucks, were considerably in excess of those for the corresponding month of previous years.

# Opposition Develops to Tire Price Raise

## Despite High Rubber Costs, Some Makers Oppose Advances at Present Time

AKRON, April 22—Although opinion is somewhat divided among executives of leading tire companies here as to the feasibility of an immediate increase in tire prices, it is generally believed there will be an upward readjustment later in the season if crude rubber continues to sell at current high levels.

The majority of tire manufacturers, particularly the smaller ones, have exhausted supplies of rubber purchased at cheap prices last summer. This situation is beginning to be reflected in reduced earnings for these companies, because tire prices are practically the same, with rubber selling at 45 cents a pound, as they were when rubber was 20 cents a pound.

Reports have been current in the industry that announcements of higher tire prices would be made by the large manufacturers during April or early next month. The possibility of such action now seems more remote, in view of opposition from some influential quarters, it is learned here.

One argument against an immediate price advance is that unfair competition would be encouraged, and the legitimate manufacturer would face a reduction in sales volume. Higher prices would be a bait for some manufacturers and dealers to flood the market with "gyp" tires, it is pointed out. By continuing to sell tires at current levels, some tire company executives believe many of the "gyp" companies will be eliminated, and the way paved for more stabilization in the industry.

On the other hand, those favoring an increase say it is poor business to sell any finished product at a price lower than manufacturing costs justify.

President B. G. Work of the B. F. Goodrich Co. indicated in a statement at the directors' meeting last week that tire prices should be advanced in order to meet changed conditions in the industry.

Although Goodrich had on hand a large supply of crude rubber, bought at cheap prices, this rubber has now been exhausted, according to Mr. Work, and future earnings will suffer, by reason of the high prices the company will be forced to pay for its rubber.

One effect of the talk of higher prices for tires has been to boost sales in many parts of the country, according to sales managers. Most dealers feel that prices are now at bottom levels, and cannot go much lower. They reason that any change would logically be upward. There is also a better demand than usual from motorists, so the dealers are carrying somewhat larger stocks in view of these factors.

## Wilmer Now Member of Dillon, Read & Co.

NEW YORK, April 21.—Edward G. Wilmer, thirty-eight-year-old chairman of the board of the Goodyear Tire & Rubber Co., has been rewarded with a membership in the banking firm of Dillon, Read & Co. for the part he played in closing the deal for the purchase of Dodge Bros., Inc. As contact man in Detroit, Mr. Wilmer is credited with having been largely instrumental in securing the automobile property for the New York firm.

His association with Clarence Dillon dates back to 1915, when they were both with the Milwaukee Coke & Gas Co. In 1916 he was made a vice-president of the Steel & Tube Co. of America and a year later became head of the buying section in charge of trench warfare material. After the armistice he returned from France to the Steel & Tube Co. and in 1921 was selected to head the affairs of the Goodyear Tire & Rubber Co. He is also chairman of the United States and Foreign Securities Corp. and a director of the North American Co. and the American & Continental Corp.

## Accidents in 1924 Cost $1,000,000,000

WASHINGTON, April 23—Traffic accidents in 1924 cost the United States more than $1,000,000,000. Automobiles killed 23,600 people and injured over 700,000. These figures have just been made public here in connection with announcement that forces of the nation will be mobilized in the coming summer for a far-reaching campaign to secure street and highway safety.

Secretary of Commerce Hoover has started preparations for the national safety council in December, when about 1000 delegates will gather from all States to draft new plans to meet what is regarded as one of the big economic problems of that day.

Last year's losses are summarized as follows:

Property damage from $700,000,000 to $1,000,000,000.

Life loss, 23,600, including 10,000 children.

Permanently injured, over 700,000.

Officials estimate that nearly $100,000,000 was lost in wages last year as the result of deaths and injury due to traffic accidents.

### LUPTON IN CANADA

DETROIT, April 22—Recent arrangements have been made with the Dennis Wire & Iron Works of London, Ont., whereby they will manufacture Lupton automotive products at London. The trade name of the Canadian product will be known as "Dennis-Lupton." This manufacturing arrangement will permit the product to be sold in Canada at a much lower price than formerly and will materially increase Canadian sales.

## FINANCIAL NOTES

**Eaton Axle Co.,** for the quarter ending March 31, earned $153,198 net profit before Federal taxes allowance, which compares with $112,000 for the same period in 1924. Sales totaled $1,931,693. After allowing $1,655,499 cost of sales and $135,629 commercial expenses there was a net operating profit of $140,563. This with other income of $12,634 made the net profit before taxes of $153,198. After taxes this earning is about 15 per cent on the present value of the stock. The balance sheet shows current assets of $2,783,430 and working capital of $2,155,277. There are no bank loans. At the end of last year the company owed the banks $150,000.

**Motor Wheel Corp.,** as of Dec. 31, 1924, shows current assets of $5,494,857, against current liabilities of $1,084,444, leaving net working capital of $4,410,413, as against $3,466,507 at the end of 1923. The company has made an additional offering of common stock, the proceeds to be used to retire the 10-year 6 per cent bonds, due March 1, 1933, on Sept. 1, 1925, at 103 and interest.

**Stewart-Warner Speedometer Corp.** shows net profit of $1,303,972 for the first quarter of 1925, equal to $2.17 a share on 600,000 capital shares outstanding, against $838,584, equal to $1.76 a share, earned in the December quarter, and $3.15 a share in the first quarter of 1924. The regular quarterly dividend is payable May 15 to stockholders of record April 30.

**Rolls-Royce Co.** of America, Inc., reports for 1924 gross earnings of $379,243 against $660,267 in 1923. After all charges and expenses the company reported net profit of $15,300 against $315,340 in the previous year. The profit was equal to 43 cents a share on the 35,000 shares of 7 per cent cumulative preferred stock, against $8.95 a share earned in 1923.

**Foote-Burt Co.,** for 1924 reports sales of $1,739,405 as against $2,126,657 for 1923, and net deficit of $11,665, against net income of $216,681. Balance sheet as of Dec. 31 shows current assets of $538,636 and current liabilities of $215,680, leaving net working capital $322,956, against $428,436 a year ago.

**Norwalk Tire & Rubber Co.,** through Frazier & Co., of New York, has offered $750,000 of 10-year 7 per cent sinking fund notes, dated March 1, 1925, and due March 1, 1935. The proceeds are to be used to retire bank loans and add to the company's permanent working capital.

**Lafayette Motors Corp.** has entered a petition for dissolution in the Circuit Court at Baltimore. The company now has no assets. An exhibit filed with the petition showed liabilities of more than $212,000, principally due banks in Boston, New York and Indianapolis.

**Keystone Tire & Rubber Co.,** for 1924, reports a net loss of $325,498, against net loss of $407,746 in 1923. On Dec. 31, 1924, current assets totaled $442,628 and current liabilities $92,478, leaving net working capital of $350,150, against $620,069 at the end of 1923.

**Goodyear Tire & Rubber Co.,** of California, for 1924 reports net sales of $15,668,0[illegible] as against $14,444,090 for 1923, and net income of $1,915,947, equal to $23 on the preferred stock, against $1,743,221 and $21 in 1923.

**Schacht Motor Truck Co.,** as of Dec. 31, 1924, reports current assets of $750,710 and current liabilities of $178,389. Total assets on that date were $911,351.

# Many Plants Run on Overtime Basis

## Federal Survey Shows Great Activity in Automotive Factories in All Sections

WASHINGTON, April 23—Steady employment conditions prevail in the automobile industry, with some departments in many plants operating overtime, according to the April bulletin of the United States Employment Service of the Department of Labor just made public here. The general reports from automotive centers show that plants are running full time, taking on more help and are generally optimistic.

Following is a detailed survey of the situation:

**BOSTON:** The rubber industry in Chelsea is operating part time, causing a surplus of this class of labor.

**NEW YORK CITY:** Automobile assembling and repairshops are taking on additional auto mechanics, body painters, blacksmiths and helpers.

**BUFFALO:** The automobile industry, with the exception of one plant, is increasing operations and adding more workers to forces engaged.

**SYRACUSE:** One large automobile plant is working overtime and will continue to do so indefinitely.

**NEW JERSEY:** Employment in the automobile industry is improving.

**PENNSYLVANIA:** The automobile industry has made substantial increases to its forces.

**PHILADELPHIA:** Automobile plants are becoming quite busy and are increasing their forces.

**MICHIGAN:** Steady employment conditions were reported in the automobile industry, with some departments in many plants operating overtime.

**DETROIT:** Automobile plants are starting to increase their forces.

**FLINT:** Some units in the automobile industry are operating on short hours.

**LANSING:** Automobile plants are operating only part time.

**OHIO:** Employment is increasing in the rubber industry which is taking up a considerable number of machinists specialized in that line.

**CLEVELAND:** Automobile body plants are working extra hours.

**TOLEDO:** The automobile plants report an increase of about 500 employees over the month of February.

# Capacity Approached in Kokomo Plants

KOKOMO, IND., April 21—Manufacturing plants in this city which depend upon automobile manufacturers for their business and which are at present operating at close to full capacity basis indicate the general improvement in the automotive industry in this section.

The Kokomo Malleable Iron Co., which makes gray iron castings for a number of automobile companies, and the Hoosier Iron Co., which makes black iron castings, have added night shifts. The Haynes Stellite Co., makers of high speed cutting tools, has just finished one of the heaviest months on record with indications that this condition will continue.

Byrne, Kingston & Co., makers of carburetors and other devices, and an allied concern, the Kokomo Electric Co., are both working at full production capacity, as is the Superior Machine Tool Co. Reports from the Apperson automobile plant indicate that it is on one of the heaviest schedules in its history.

# Time Sales Increase in March Over 1924

NEW YORK, April 22—The course of automobile financing, whether up or down in proportion to total sales to dealers and public, is one of the significant factors in the automobile business of today, but accurate and representative figures are hard to obtain. There are several hundred finance companies scattered all over the country and a consensus of opinion among them is usually not to be found.

Figures obtained today from the Auto Financing Credit Men's Association, Inc., of New York are probably the most significant so far available. This association represents about sixty of the largest finance companies and close to half the time sales of the industry are handled by the members.

Records of the association show that the members financed the sales of 55,086 cars in March, as against 53,783 in March, 1924. The indicated gain was 1300, but the actual gain was much greater, because production in March last year was higher than this year and because the latest figures do not represent sales in the Chicago district, which is now covered by a separate association.

If the Chicago figures were included, about 5000 would be added to the March, 1924, total. The returns for that month represent mainly wholesale business, so that there is apparently a real gain of considerable extent in the financing of sales to dealers. The totals for April and the succeeding months will have a much higher proportion of retail sales.

Incomplete figures for the first three weeks of April show that the totals for the month will be several thousand over March and over April of last year.

### CONSIDER TRAFFIC CONGESTION

LOS ANGELES, April 20—David R. Faries, vice-chairman of the Los Angeles traffic commission, will talk to the local section of the Society of Automotive Engineers on the Los Angeles major traffic plan on April 24. Phil Harris, chief engineer of the Los Angeles Railway Co., will give his views on "Can Motor Buses Relieve Traffic Congestion"

### REO STOCKHOLDERS INCREASE

LANSING, MICH., April 20—Reo Motor Car Co. states that in the last five years stockholders of the company have increased from 3500 to 7200, many employees of the company and local residents having purchased shares.

# METAL MARKETS

Sheet prices continue open to attack. On the one hand, they are at the mercy of consumers who have fairly inviting tonnages and specifications to offer. On the other, mills with a shrinking backlog of orders are not above slashing prices voluntarily in their eagerness for business. Full-finished automobile sheets which have for some time sold at prices below the parity of other sheets and steel products are now relatively steady, but prices for black and blue annealed are decidedly ragged.

The critical period through which the industry is passing has caused a revival of old-time rumors of impending consolidations, especially in the full finished sheet field. Certain it is that red-ink entries are the rule rather than the exception in non-integrated sheet plants, and the only hope for early amelioration lies in a drastic curtailment of operations.

Those who permit the intensive scramble for orders among steel sellers to lead them to the belief that the market is headed for further sharp declines in the immediate future are likely to be disappointed. Prevailing conditions are not conducive to the rearing of a new price structure. Permanently lower prices may develop slowly as the result of the same influences in all commodity markets, but such a movement will need be spread over years rather than months.

For the immediate present, the steel industry will have recourse to the simple expedient of steadying prices by adjusting its rate of operations to the demand. Current demand represents not much more than one-half of the rate at which the industry operated earlier in the year, and, unless there is an entirely unforeseen change in this state of affairs, there will be from now on a steady diminishment in the rate of production until the latter again more nearly balances the demand.

During the spring and early summer months, due to propitious weather conditions, output is always better than anticipated, which is all the more incentive for curtailing the number of units in operation when the demand is unsatisfactory. Even veteran steel buyers frequently fall into the error of believing that steel mills must keep going, and, therefore, must have orders regardless of the adequacy of prices. Every so often, however, and the present is no exception, the steel industry slows down its operations as a means of steadying prices. This influence is much more potent at this time than the keen competition for what light business is in the market would seem to indicate.

**Pig Iron**—Automotive foundries buy from hand to mouth, confident in the belief that they fare better in doing this than in placing contracts just now. Dull and deserted as the market is, it may, of course, turn over night.

**Aluminum.**—There is a total lack of "resale" metal which in years past has always been the means of lower prices whenever consumption would decline. Automotive demand, in fact, is very good, some consumers asking deliveries in advance of their falling due, but aluminum consumption in other lines is said to be lagging. The market is unchanged.

**Copper**—With new low record prices for both copper and brass products, the market is a routine affair.

**Tin**—This metal has apparently begun the return to somewhat higher price levels.

**Zinc**—The market is easy.

# Calendar

### SHOWS

April 22-May 7 — Melbourne, Australia, International Automobile Show, under the auspices of the Chamber of Automotive Industries, in conjunction with the Royal Automobile Club of Victoria.

May 20-23—Detroit, Second Annual Automotive Maintenance Equipment Show, General Motors Building, conducted by the National Automobile Chamber of Commerce, with cooperation of the Motor and Accessory Manufacturers Association, National Automobile Dealers Association, Society of Automotive Engineers, Automotive Equipment Association, Automotive Electric Association and the Automotive Manufacturers Association, Sam Miles, manager.

Sept. 21-26—London, England, Annual Cycle and Motorcycle. Show under auspices of the British Cycle and Motorcycle Manufacturers and Traders Union, Ltd.

Oct. 8-17 — London, Olympia passenger car show.

Oct. 29-Nov. 7—London, annual truck show.

### RACES

April 30—Fresno, Cal.

May 11—Charlotte, N. C.

May 30—Indianapolis.

June 13—Altoona, Pa.

June 20—Baltimore, Washington Speedway, Laurel, Md.

July 26—Paris, Montlhery Track, French Grand Prix.

Sept. 7—Altoona, Pa.

Sept. 30—Fresno, Cal.

Oct. 10—Baltimore-Washington Speedway, Laurel, Md.

Oct. 24—Charlotte, N. C.

Nov. 26—Los Angeles.

### CONVENTIONS

May 6-9—Ninth annual meeting of the American Gear Manufacturers Association at William Penn Hotel, Pittsburgh.

May 20-23—Milwaukee, National Association of Purchasing Agents.

May 20-23—Detroit, General Motors Building, National Automotive Service Convention conducted by the National Automobile Chamber of Commerce with the cooperation of Motor and Accessory Manufacturers Association, National Automobile Dealers Association, Society of Automotive Engineers, Automotive Equipment Association, Automotive Electric Association and Automotive Manufacturers Association.

May 26-27—Regional Motor Transport Conference under auspices of National Automobile Chamber of Commerce in Chicago. "Coordinated Transportation" will be the theme of the conference.

June 1-3 — Detroit, American Body Builders Association at Hotel Statler.

June 22-27—Summer convention of the Automotive Equipment Association at the Broadmoor Hotel, Colorado Springs, Colo.

### S. A. E. MEETINGS

#### National

April 29-30—Tractor meeting in Chicago.

June 15-19 — Summer meeting of the Society of Automotive Engineers at White Sulphur Springs, W. Va.

Sept. 15-16—Production meeting and exhibition.

Sept.—Automotive Transportation meeting.

Nov. — Service Engineering meeting.

## Tractor and Parts Sales Up in South

ATLANTA, April 22 — Accessory, parts and equipment sales for the first half of April by Atlanta jobbers were the heaviest of any two week period this season. Retailers from all parts of the South have been active in buying and indications point, state the local jobbers, that April will prove by far the best month of the year to date.

Sales during March experienced a considerable increase following the dull period in February, and then increased again toward the latter part of the month and through the first two weeks of April. The retail trade, however, is showing no tendency to buy on a longer time basis, and nearly all dealers are taking only what they may require for a four or five weeks' period. Their total purchases have totaled much larger than earlier in the year, which has resulted in the present improvement.

**Outlook Promising**

Reports from larger distributors of tractors and farm equipment are more encouraging than at any time for the past year. Tractor sales volume during March showed an increase of 20 per cent over the corresponding month last year. Managers of the factory branches in Atlanta say that this makes January to March one of the best early year periods in the history of the industry in the South. The outlook portends a continued improvement in sales on about this same basis for the rest of the spring.

Primary buyers of tractors have been the industrial enterprises, which show a 30 per cent increase over last year, while agricultural sales have improved over 1924 only about 10 per cent. Sales in February were 30 per cent better than in January and in March is estimated at 20 to 25 per cent better than February.

### *N. A. C. C. WILL DINE PRESIDENT OF CUBA*

**NEW YORK, April 22—General Gerardo Machado, President of Cuba, will be guest at a banquet tendered in his honor by the National Automobile Chamber of Commerce at the Hotel Commodore, on the evening of April 28th. A group of his friends, including the Cuban ambassador, will also take part in this event, at which John N. Willys, chairman of the foreign trade committee of the association, will act as toastmaster.**

**The new president of Cuba was elected on a platform which comprised encouragement of motor transport as an essential to the development of the Island by the construction of a highway to link Havana and Santiago.**

### I. C. C. CUTS RATES

WASHINGTON, April 23—Automobile manufacturers are affected by a new set of rates prescribed this week by the Interstate Commerce Commission on manufactured iron and steel in carloads from points in the Pittsburgh district to St. Louis and destinations in Illinois and Indiana. The Commission held that present freight rates were unreasonable.

### TRAILERS NOT TAXABLE

WASHINGTON, April 21 — Vehicle trailers are non-taxable under the Federal law pertaining to automobiles and parts, according to a decision of the Court of Claims made public today by Attorney General Sargent. The Bureau of Internal Revenue had taxed two- and four-wheel trailers, usually used behind automobiles. An action was instituted against the Government by a company manufacturing this product.

## New Flint Sales Plan Cuts Retail Staffs

FLINT, April 17—Changes in the retail selling plan of Flint Motor Co. are now in effect in the twelve major and three subsidiary factory branches of the company, the new plan providing for the establishment of route stations throughout the territory served by each branch and eliminating largely the necessity for maintaining large staffs of retail salesmen. Details of the plan are still subject to revision, but it will be given a thorough trial under the personal direction of W. C. Durant.

Before undertaking the change in sales method Mr. Durant is understood to have given it a trial in several cities where it worked out successfully. This has led to the expansion of it to every city in which the company operates its own branches, and it is also offered to the general distributor and dealer organization of the company for optional use.

**Fixed Fee on Sales**

As now effective, the plan provides for naming any automotive establishment as a Flint representative. This representative carries no cars and is given a fixed fee for every sale to a prospective buyer he developed. Fees are fixed according to the model sold. All prospects are listed at the branch under the representative's name, the actual sale being carried through by demonstrators and floor salesmen at branch headquarters.

Number of representatives, termed route stations, varies in all communities, the intention, however, being to obtain as large a number as possible. These turn their prospects over to the branch manager who follows them through, first by demonstration, then by sales effort at the branch. Every effort is made through the route stations to get prospects who are not present car owners.